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University research could lead to **DEC** launch

by John Kavanagh

COMPUTER design research taking place at Manchester University could lead to the launch of a parallel processor by US minicom-puter giant Digital Equipment.

The company's president, Ken Olsen, says that a "medium-size project" is underway to develop a machine with "a completely dif-ferent architecture". It will be a "simple computer that goes very fast", Olsen says. DEC is not yet sure what all its applications will

Leading UK users speculate that this could be a parallel processor. Cliff Evans, deputy chairman f the users association, points to DEC's marketing agreement with army processor specialist Floating Point Systems. DEC is also working on artificial intelligence, which involves handling vast amounts of data. Parallel processing can help here.
Last year DEC took a close is

terest in work on a dataflow archi tecture at Manchester University The research is backed by a four-year grant of almost £434,000 from the Science and Engineering Research Council. That grant runs

out in September next year.

"DEC is looking at various unusual architectures and will probably pick one of them," says Dr John Gurd, one of the project leaders at Manchester.

"At present our work is speculative - but we have ideas for integrating it into DEC's existing and potential products.

We have no close ties with any

exclusive".
DEC's interest in Manchester University's work dates from last | PAYE. year's announcement of the comfirst research and development centre outside the US. Darryl Barbé, UK managing director at

Olsen also promises "drastic" price reductions over the next 18 of the civil service; months. He says DEC will conti- Other concession



LLOYD . . . "We're long on diagnosis and short on action."

for science in the government's new White Paper on expenditure plans, and found half a column out of 175 pages and only two vague glimpses of policy." Lloyd asked: "How many times

has the Alvey Programme been discussed in Cabinet? It should review it once a formight — but I suspect it is discussed only once

The criticism came during a debate on a motion by Labour MP for Jarrow, Don Dixon, who called for a searching review of IT policy. He attacked "government by

very long on diagnosis and very He remarked that the low prior-

only about two dozen members out of 650 having turned up for the This was even though technology was debated much less frequently in the House than it

ity for technology was reflected by

Opening the debate, Dixon said that research and development was spread across 22 government departments with little overall plan. He quoted a prediction that

In stock now Tektronix¹³ 4010/4014 compatible graphics lemina

the "extra-territorial" trade pocies of the US.

Tory MP slams Esprit gets the technology policy by George Black A BLISTERING and unexpected attack on the government's hand-ling of new technology was made in the Commons last week by Tory MP Ian Lloyd, Lloyd, chairman of the Parlament for dealing in the Commons last week by Tory MP Ian Lloyd. Lloyd, chairman of the Parlament for dealing in the Gommons last week by Tory MP Ian Lloyd. Lloyd, chairman of the Parlament for dealing with IT matters. He contrasted the service provided by the US Congress's Office for Technological Assessment. Rejecting Dixon's motion for a receive of Trology Lloyd said: "We've produced report after report, I believe we're provided for policy Lloyd said: "We've produced report after report, I believe we're provided for the Esprit programme, ment in Britain today," "I nooked to the Esprit programme, ment in Britain today," "I nooked to the Esprit programme, managed to get the European man

Etienne Davignon, was announced

at the meeting of the Council of

European Research Ministers in

areas: advanced microelectronics

heavy lobbying by European Com-missioner for Industry Viscount n John Riley THE British and German govern-THE British and German governments suicide for this country accept the US-proposed mind list of controlled technology a ports.

The US wanted to extend on the use of th

The US wanted to extend the list optimistic decision and trols to "intangibles", he are the first optimistic decision of the such as software expertise. When the list optimistic decision of the such as software expertise. When the list optimistic decision of the such as software expertise. When the list optimistic decision of the such as software expertise the list of the lis

sys European Commission vice president Viscount Etienne Davig-"This means that when we opose concrete actions in the hology sectors no-one will be able o oppose us on the grounds of The decision, which follows

manufacture. Davignon, who was the archi-

meeting,

tect of the Esprit programme, managed to get the European Commission, European Parliament and national governments to agree to the technical and admi-Brussels this Tuesday. Informa-tion Technology Minister Ken Baker represented the UK at the nistrative details of the programme in record time, within a few

However, although the level of funding was also agreed in prin-Esprit was set up with the help of the leading European IT comciple, the go-shead was not given because Esprit became entangled panies to ensure that the European in the wider European Comn budgetary crisis. Neither the Ger-IT industry holds its own against Japan and the US in the future. man nor the UK governments The programme involves long term collaborative R & D in five would agree to make an exception and give long term financial assurances to the £860 million (1.4 biloftware technology; advanced information processing; office auto-mation; and computer integrated lion ECUs) Esprit programme until the long term financial future

by Dave Madden ALVEY Programme director

Brian Oakley has widenened his

initiative to encourage private funding within the Alvey pro-

Last week he made a presenta-

tion to a dozen UK venture capital

groups to explore the possibility of them backing companies taking

part in Alvey projects.

Oakley said he was anxious to involve "good small firms who can't meet the 50% contribution.

requirement. At the moment the number of small firms is not parti-

cularly impressive".

Although he didn't expect venture capitalists to fund research

hoped that "if there is a small com-

pany that we want to involve, then

Companies attending the meet-ing included the Barclays Bank

high technology ventures division,

that very fact might encourage venture funds to take an interest"

development as such, he



DAVIGNON . . . Lobbied.

the best approach.

small firms' funding

insists the two events are not connected and that ACT does not need shareholders' money to fund the bid. "It's a coincidence. We began discussions about raising cash last December; the growth we anticipate especially in export markets meant that we would need more money. Buying rights to Sirius will be funded internally." Some City analysts were sceptical about the company's claim.

ACT taps

The company s ciaim.

The company made a one-forfour rights issue, involving 3.3
million shares at 530 pence against
a market price of 610 — which
should raise £17.2 million after expenses. In the issue document, ACT forecasts that its pre-tax profits will rise from £2.17 million to £4.5 million in the year to March 1984, on turnover of £50 million. Turnover to March, 1985

should be at least £50 million. Bury says that in the interests of "financial prudence" those esti-mates take no account of negotiations with Victor, and assume no sales of the Sirius 1 - though Bury emphasises that the company do not expect any interruption.
According to Bury, ACT has

nothing to announce about its offer for Victor products: "Things are progressing satisfactorily," he

omments.
ACT's shareholders responded enthusiastically to the cash call the British Technology Group,
Investors in Industry and Prutec.
Tony Diment, a director of 3i
Ventures, the high risk — high
tech arm of Investors in Industry,
said that Oakley received "a generally positive reception" and that he
believed the idea of consortia wasits stock rose 40 pence to 650 on the news. ACT last made a rights issue in March 1983 when it raised £6 million to fund development of its Apricot portable micro.

NCR retains shareholders top cash register spot

for £17m NCR's UK subsidiary has reby Dave Madden ported a 7% increase in pre-tax profits to £26.4 million on APPLIED Computer Techniques (ACT) has tapped its shareholders turnover up 7% at £125 million for for £17 million in a rights issue year ending November 30 1983. The company has been pushed hard by IBM in the mainframe while it awaits the outcome of its bid for the manufacturing rights of bankrupt Victor Technologies' Simarket, but is still the leading UK rius 1 microcomputer. supplier of electronic cash registers Lindsay Bury, ACT's chairman, and automatic teller machines.

IBM boosts golf

IBM is trying sport sponsorship for the first time. It will be putting up £25,000 towards this year's ladies' open golf championship which runs from August 29 to September 1. In addition, there will be a special IBM trophy for the wild read a Parsonal Communication of the property of the prop the winner and a Personal Computer. Micro maker Acorn is also spreading its sports sponsorship beyond chess and motor racing. is sponsoring junior international tennis player Teresa Catlin from Acorn's home town of Cam-

Thorn purchase

THORN-BMI Computer Software has signed an agreement to buy a major US application package firm. Mike Shone, managing director of Thorn's Software Sciences subsidiary, says the agreement, which involves a series of payments, has to be concluded by April 15 but he aims to tie it up by the end of March.

Malloy quits

BRIAN MALLOY has quit as UK managing director of Storage Technology, the US company which specialises in plug compatible disc systems. This sudden move was brought about by his desire to return to Canada, his homeland, coupled with the offer of a new position that Storage Technology could not match.

Tax workers union backs agreement LEADERS of the tax workers' union have approved a new technology agreement with the Inland Revenue in which the Revenue case it will do it a warrest to said. by Nuala Moran

says it will do its utmost to avoid compulsory redundancies as a re-sult of the computerisation of offices, and says it will revise its

At the same time, the Revenue 19 has agreed to spread the benefits of computerisation. It will set up a

Other concessions include inmonths. He says DEC will continue to concentrate on its Vax 32bit computers and will press shead with multi-processing through regions source sharing facilities or lithernet local networks.

Other concessions include involved on the agreement.

Working, including job sharing and greater flexibility in annual Midlands "temporarily relieved and special leave arrangements.

The union still has to accept VDUs have returned to work.

The Revenue has agreed to temmanpower target figures up to 1988 to be as flexible as possible for shedding staff.

Barbé, UK managing director at the time, said the UK would make a "key contribution" and that the centre's work would be "right on the fringe of the possible".

Olsen also promises "Special of the agreement on "self determination", whereby staff will decide full training in new technology; on their own working patterns; not to introduce shift working the union; and that if the experiment is successful. Other terms of the agreement it could be extended to other parts formation and consultation proce ... dures have been carried out.

Members of the union have from duty" after refusing to use

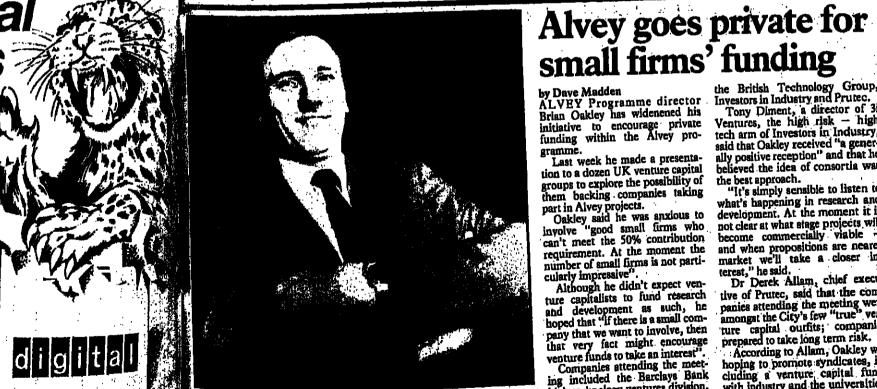
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DIMENT . . . "Sensible to listen."





Professor Barnwise's Don't get caught in the ICL snub benefits



Job Vacancies 38-79

Apple/Linz "It's simply sensible to listen t what's happening in research and development. At the moment it is not clear at what stage projects will become commercially viable— and when propositions are nearer market we'll take a closer interest," he said.
Dr Derek Allam, chief executive of Prutec, said that the com-panies attending the meeting were amongst the City's few "true" venture capital outfits; companies prepared to take long term risk. According to Allam, Oakley was hoping to promote syndicates, including a venture capital fund, with industry and the universities. Rent or Buy! Any period from 1 week to 5 years! City Office: 01-020 2181 West Country Office: 0272 277238 Middlands Office: 021 632 5102 North Midlands Office: 002 982 3320 Northern Office: 0025 8222201 Rentals

by John Kayanagh THE review of the government's central computer purchasing agency, the CCTA, submitted to the Treasury last week, leaves computing services firms poised to make hig money from government cohtracts. But the review is likely to meet still opposition from civil service unions. The review, by CCTA idirector pensishility with no staff increases. As a result there will be "roop do government or particular areas what they should be doing. They need experts in particular areas whom they don't have themselves. And we need big government contents to mistactic information technology matters, such as procured to account a general concentrate on strategic information and contrading for information technology products and services in behalf of the department of the concentrate on strategic information and contrading for information technology produced by the correct of the concentrate on strategic information and contrading for information technology produced by the correct of the concentrate on strategic information and services and standards and the particular areas well and services are sealing on off information and error against more binsings, going the correct of the correct of the correct of the concentrate on strategic information and contrading for information technology matters, such as good practice and standards and the particular and sortices of the correct of

Review clears way for private firms

warranty from Digital

V.F. and P.A. And the hope and the large states

Researcher predicts bleak future for Xenix

by George Black A BLEAK future for Microsoft's Xenix operating system was predicted by Jean Yates, a leading Californian market researcher, in London last week.

At a conference on the software owned by AT&T, and widely expecied to become the industry standard multi-user system, she said: "Why would anyone want to buy Unix System V from Microsoft and have to wait for enhancements when they could get it direct from AT&T?"

Her forecast clashes directly with those of other experts who anticipate IBM will plump for Microsoft's version.

However, she said, Microsoft would thrive as a package developer, boosting its revenue in 1984/5 from \$60 million to \$100 million, mainly derived from applications

Yates, whose firm Yates Ventures counts most main hardwaremakers among its customers sketched the scenario where IBM's marketing know-how was pitted against AT&T's superior technology and control of the digital switches. This was what had forced IBM into the Unix arena.

She predicted that a major announcement by IBM on a Unix plan for all of its machines would be made in April or May.

be made in April or May.

"If it hasn't happened by August, I'll fold my tent and disappear into bio-technology," she pledged.

Meanwhile, AT&T has just begun a \$10 million advertising campaign in the US press to continue

over the next three months. Yates forecast that the Unix hardware and software market would be worth \$9 billion by 1987. Of 90,000 Unix licences sold so far, only 20,000 were to commercial users, she said. But by the end of 1986 1/2 million licences would have been granted and most of these would be in the commercial



She said lookalikes were no longer viable products — but their creators could make a comfortable living out of porting Unix. Many of them had had delusions of grandeur about competing with AT&T, she said.

Many major vendors of financial applications would find themselves stranded by users switching to Unix, she forecast. "They've followed IBM like lemmings."

IBM's PC version of Unix -PC/IX - she saw as principally

intended for engineering and r search environments, not business

and in May is hosting a conference in San Francisco on Unix, which is expected to attract 600 people— twice the number she had planned

■ More conference details Page 10.

Scheme leads to work for Star apprentices

by Nusia Moran AN apprenticeship scheme for the included a mix of classroom tuition at Star's headquarters, day release and practical training.

David Blechner, managing director of the Star group areas. computer services industry has just produced its first batch of graduates". After completing a one-year course, five apprentice service engineers have gained full-time jobs with the Star Computer Group of Hackney, London. And another four trainees have just started the course. director of the Star group, says: "The apprenticeship scheme was

started the course. The five were trained under a joint scheme introduced by the London Borough of Hackney and Star. Each apprentice was paid C3,200 for the year, of which Hackney council provided £2,100. Star paid the rest and also paid for the training.

The course was devised with the help of the Hackney ITEC and

Intentions are kept out of Data Bill

will have a "significant" effect on

productivity and profits and

So says a report on a study of

mailbox systems carried out by the National Computing Centre with government backing. But the report also points to the main prob-

lem hitting the effectiveness of such systems: lack of standards. International bodies are working

on standards, but the lack of agree-

ment so far is reflected in the fact

that the UK government has al-

ready shelved one proposal for an interim hybrid standard.

permeated throughout an organi-sation, a new corporate culture starts to emerge," says Paul Wil-

son, senior consultant at the National Computing Centre.

"When a mailbox system has

possible by UK firms.

THE government has successfully resisted Opposition moves to in-clude computer-based information about people's intentions (ie their plans for the future), within the scope of the Data Protection Bill.

David Waddington, Minister of State at the Home Office, declared that either all intentions about the

that either all intentions should be included or none. The government could not

planning information, such as possible senior staff changes some years ahead, should be included within the ambit of the Bill.

However, data users could be in By this token, microfilm, which

formation recorded on current facts and opinions was intention, Waddington asserted.

Waddington could not see that a court could order a person to change his intentions. Therefore, it followed that there was not much point ordering a person to change the record of his intentions.

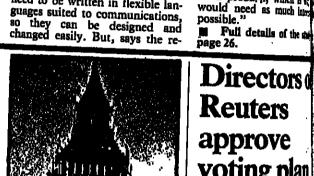
amendment to limit the definition of those deemed to hold data. This let the Opposition in with a country

previously had the opportunity to discuss whether manual files should have to be registered. Howell, for the Opposi-

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approve voting plan by Dave Madden DIRECTORS of Reuter,

ternational news agency mid puterised financial inform group, have approved a reming plan designed to protein independence of the countries. services after it is floated or Stock Exchange in May.

box structuring reser

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It also recommends that

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ment mailbox systems -

"I believe if there's cook back from government, at

the industry to this top

NCC will push position.

any way it card billion it is worked, a pomed up a construction of the problem, which is the would need a construction of the problem.

so quickly

The changes are aimed at ing voting control in the band existing newspaper sharebook Some City investment makes view the new structure some sarily complicated, and Ree share price may be sive

The plan provides for sor classes of shares: 25% will be served for the newspapers that rently own 82% of Renars four times the voting right of shares will go on offer to the p

Analysts estimate that Ro has a market value of around billion. The public sale of shares reflects the desire of o strapped newspapers to take vantage of the company's

Its pre-tax profit rose 12% £36.5 million in 1982 on tune of £179.9 million, Antique forecast 1982 forecast 1983 profits of around

ms of circulation control inputer Weekly is sant free of charge to owing categories in the UK only. Carl octors, company secretaries, output rice executives, civil servants report free executives.

Traditionally, potential in ing institutions have taken 1 de view of share structures with the plicated voting rights. Nei is ton, of Manchester stockhols Henry Cook, Lumsden, say: will be accepted, but without Computer Weekly, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS. Telex: 892084 BISPRS6

by Keith Holder
THR first commercially available
high-speed gallium arsenide chips
are ready for shipment, according
to US semiconductor manufacturer Harris-MHS.

It has released two devices, a four-bit shift register and a binary counter which, says UK manager Geoff Haynes, can be supplied in substantial quantities.

These are the first of a series of devices scheduled to be launched by this summer.

Quantity costs are about double hat of the silicon equivalent, but laynes says that users get a four-old increase in speed.

The devices are fully compatible with current emitted.

The advantage, he says, is that access to less critical, slower speed circuitry is faster, making the overall system more effective.

ations and radar equi ment. The company recently started up its own gallium arsenide ingot-growing facility, the largest

It is capable of producing ingots five inches in diameter.

Mailbox system Martin advises should up profit Alvey COMPUTER industry gu Martin is giving some fre Martin is giving some

gramme on the future direction of port, existing languages have such features.
The report therefores "immediate" formation of computing research. He is reviewing the strategy for the programme's software engineering.

The review is in return for a talk by Alvey director Brian Oakley at James Martin seminar in Decem-

in the UK and read physics at Oxford University. Most of his career has been spent in the US, where he cluding 10 years at the company's Systems Research Institute.

He is now chairman of Jame Martin Associates, and spends much of his time writing and lecturing. He is consulted by govern-ments around the world, and advised the UK government on the sale of British Telecom.

David Talbot, head of the Alvey software engineering programme, says Martin is "very distinquished". He adds that the procause computing is ever changing. MARTIN . . . Described as "very distinguished"



Building societies mix teller plans

LANS for a nationwide network societies. building society self-service teller machines were in confusion this week when it emerged that seven of the top 10 societies were planning their own network. Smaller, local societies now fear

they could be kept out of the national scheme, which would have given them nationwide coverage of the market.

The seven are Nationwide, with assets of £6,400 million, Leeds Permanent, Woolwich, National and Provincial, Anglia, Alliance and Leicester, which has assets of

Halifax and Abbey National, the two largest societies, have their

The seven are part of a group of nine societies with similar levels. There is then a clear break

Initially, the idea of a national

They stood to gain because a

teller machine in, say, a Nationwide branch in London would be available to members of a society with only a few branches, all in one area. This out Halifax and

Nationwide off the idea; Halifax with competitors.
But Nationwide has come round

to the idea of a network linking big societies which already have national coverage. It started talking to the other big

societies last autumn. Paul Clifton, computing manager at Leicester Building Society, says the Leicester believes in

sharing teller machines.

"The only practical way to get a network going is to have a limited number of societies initially," he

shop. The intention would be to make it available later to other s

"There would be some restric tions: societies would have to be able to afford the equipment to get nto the network."

But smaller societies fear the could be locked out.

"The original members could lay down terms for joining which might not be acceptable," says Frank Strickland, general manager at the Sunderland and Shields Building Society.

It was Strickland's report on a shared system which led the Building Societies Association to set up a company called EFT to run such

"EFT was set up with the idea that all societies would be able to

join," Strickland says. "Ît's all very unsatisfactory," he

complains.

Acorn's success leaves City nervous

by Dave Madden
ACORN Computer doubled its
pre-tax profits in the six months to January 1, 1984, but the City is still nervous about the company's

In its first figures since joining the Unlisted Securities Market last October, Acorn reported profits up 156% at £5.08 million — after up 156% at £5.08 million — after an exceptional charge of £2.5 mil-tion relating to start-up costs in the US and Germany. Turnover rose 180% to £40.4 million. In the year ending July 1983, Acom returned profits of £8.6 mil-

Acorn has not had the glamo-rous career on the USM that was predicted for it, and its interim statement has had a very mixed reception. John Paterson, of stockbroker Albert E. Sharp, com-ments: "If you exclude the startup charge, then they made around 17.7 million, which is what one would have expected on that sort of turnover. It all looks very en-

"It is still amazingly high risk though the company seems to be doing most of the right things."

But Mike Whitaker of Simon & Coates says: "I thought it was disappointing. They could struggle to do £15 million in the full

year, and the shares look generally Not surprisingly, Acorn shares fell 12 pence at the news, thought they recovered to end the day five pence better at 151 pence, when the significance of the start-up loss

There is concern about Acorn, QL", he adds.

both short and long term. Even taking the US loss into account, this half is only 14% up on the preceding period, compared with a tripling of profits between the first and second half in 1982.

port orders at record levels. I expects to have its contract with the BBC renewed this Spring, and says that the US operation should be making a contribution by the year end. It is using the education market to break into the US and reports an "enthusiastic res-

But Acorn warns of shortages of standard components. The com-pany intends to quadruple produc-tion of the Electron to £100,000 worth of units per month during 1984, but it will be some time before it can clear the backlog of more than 200,000 orders. It ex pects to maintain current level of production — about 20,000 per month — of the BBC machine during the second half of the year.

The company stresses that i research and development invest-ment, which includes a recently opened centre in California, w turn into marketable product thi year. First up will be a business version of the BBC Micro, the JBM, with a CAD workstation before year end.

Whitaker expects Acorn to add a Z-80 processor to the BBC board in the £1,000 JBM, "and with two floppies, running CP/M, that's not very exciting against Sinclair's

High-speed chips are due

with current emitter-coupled logic (ECL) components and can be in corporated into existing circuit

Richard Soshea, general manager of the company's US division, describes the market potential for gallium arsenide technology as poised for explosive growth.

The main market for these devices is likely to be in military applications at first, including

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by Philip Hunter
ICL last week gave top UK managers a glimpse of possible future products at the Techniart 84 exhibition at the National Exhibition Centre in Birmingham.

Interest was aroused particularly by an expert system designed to analyse a customer's computer requirements; which could become part of ICL a decision support either training system.

The system is based on Sage, a package available now for building expert systems from SPL International, and will soon be used by ICL to help assess the computer requirements of some of its own larger customers.

The system will also run in or the ICL Perg as a standaldine pack.

ICL gives glimpse of future

Software Edijor George Black

attractive for two reasons. First, the company is growing rapidly and we need engineering staff to service the range of computers we supply. And second, it provided Star with an opportunity to contribute to the local community.

bute to the local community. "Star has always taken on school leavers and trained them up, and I am a firm believer in apprentice-ships for the computer industry. The computer service industry has a role to play in this. We can't just go on poaching people off the manufacturers?

search environments, not business users. "There are plenty of people who want to experiment with Unix among the 1.6 million PC users."

Yates is to open a European branch of her firm next month,

week to the Commons by Tony Newton, Under Secretary of State for Health and Social Security. On The government moved an current plans the project would

ter amendment aimed at includin manual data within the range of The Opposition had not

"This is characterised by less concern with processes and more

concern with getting things done.

Delegation becomes more com-

mon and employees are more flex-

team working, better decisions

based on more relevant up-to-date

information, improved customer service and faster product de-

The study examined 34 mailbox

systems. They had 105,000 users and the number was growing ra-

"Unfortunately," says Wilson, "today's reality is that most mail-

box communities are isolated

within their own systems."
In addition, mailbox systems

need to be written in flexible lan-

"The net result is more effective

ible and responsive.

Howell suggested that people might wilfully choose to keep information in manual files, rather than on a computer, in order to cape possible prosecution under agree, said Waddington, that planning information, such as pos-

However, data users could be in trouble if they tried to circumvent the Bill by pretending that in-formation recorded on current was essentially miniature typescript, would be covered by the Bill If it was read by a computer. However, it would be outside the scope of the Bill if it was read only by human eye through

The proposed local office computer project of the Department of Health and Social Security to link 500 local offices was explained last

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tion, moved the amendment cover data in a form "capable of being processed".

human eye through a magnify-

take about 41/2 years to complete,

The Commons was also told that

the Royal Ulster Constabulary was planning to computerise its exist-

ing lingerprint records and various administrative systems, including

certificates.

CONSULTANCIES SALES

vehicles and firearm

put up with the faults any longe

'It creates a lot of extra work for

staff when we are under pressure

he says. "Admittedly the timescale for implementing the new legislation was too short, but ICL did not treat the project seriously enough."

Some users are said to have taken on the ICL package, but many of them have since switched to where and several are said con-

to others and several are still con-

sidering doing so.
The Guildford treasurer, Walter

Jones, says the features of ICL's

programs relating to students have been given low development prior-

"Six basic changes a year are needed to handle the question of

students and we have had to deal

from the government to cut back, he says. "Admittedly the timescale

PICK . . . Giving his system a new start.

Pick breaks into IBM XT market

by Claire Gooding
DICK Pick, author of the Pick
operating system, has launched his
own implementation of the operating system and relational database
for IBM's Personal Computer XT.
Pick's announcement of the XT
implementation confounds re-

implementation confounds rumours that he was planning to abandon the project, because it was behind schedule, in favour of the Revelation lookalike from Cos-"Drop it? I don't think so," says'

independent consultant Jonathan Sisk, who has been working closely with Pick Systems. "This is a breakthrough for Pick into a sig-nificantly wider market." According to Sisk, it is possible to take any Pick software from

existing systems and run it on the PC without change.

That isn't possible with Reve-

lation, which has many incompatibilities, and is not a complete implementation," he states. "This is complete and pure Pick: it can

uses an IBM-PC XT, with three terminals and a printer.

Pick Systems and Microdata, the first to implement the operating system, have signed an agreement with Cosmos, putting an end to speculation that Pick might sue the company.

Pick and Microdata will acknowledge Revelation as a Pick lookalike, and allow Cosmos to use the name Pick in advertising material, in return for royalty payments from Cosmos. Neither company is endorsing or supplying way of selling more from."

the product. "Pick simply has no interest in Revelation," says Sisk. The main crowd-puller at the

Reno conference was the CDI Series 1, the system which is being for the project. "There does seem to be a lot of interest in the project, although some authorities manage to perform well using manual records."

A working party was set up to look at developing a standard system in July 1983. It has just completed its initial feasibility study, which will be circulated to local authorities, accompanied by a questionnaire.

special beauty.

"This means that computerisation is not straightforward because there are so many different bits of the local authority which could have information a purchaser would need. The other problem is that local authority computers vary and a standard system would have to run on many different kinds of machines," says Davie.

The Housebuyers Bill, the priused to give the first public airing of Pick's long awaited new product, Release 84.

Pick told Spectrum conference that he has changed the name of Release 84 to Open Architecture Release 1.0, to reflect the considerable enhancements which effectively gives the Pick vely gives the Pick system a new

Pick has removed many of the limitations, such as large number handling, and changed the basic structure of the system so that it is more flexible.

Much to the relief of the flourishing Pick industry, the new re-lease will still allow existing programs and applications to run without users noticing any dif-

"The structural enhancements is complete and pure Pick: it can handle data dictionaries and programs."

The multi-user implementation uses an IBM-PC XT, with three terminals and a printer.

Pick Systems and Microdata, the first to implement the operating system, have signed an agree-



BT plans VDUs in phone boxes

by Donald Kennett
BRITISH Telecom is planning to
put touch sensitive VDUs into
telephone boxes to give the public access to its new computerised directory enquiry service.

The computerised directory is to go into service in the second half of this year, initially at three centres in the North, the Midlands and London. It is primarily intended for use by directory enquiries operators and it is planned to cover the whole country by early 1986.

But when the E32 million contract was awarded to Standard Telephones & Cables last May, BT said that a caregrapy to Prestel

said that a gateway to Prestel would be provided on the system early in 1985. The service could then be accessed directly from

ouch-sensitive screens from its City Business System money dealer's terminal installed in call

successful, paper telephone directories could eventually be done away with, as the Prench PTT them.

considerable delays, but BT's attitude is that it prefers to set up services that are commercially jus-tifiable on a shorter timescale than that of the ambitious but risky French plan.

If BT charges at cost for its directory enquiry services, an electronic version could soon become cheaper than operator-based in the face of objections from the Telecommunications These Access Telecommunications Users Association from the idea of making any charge at all for a call to direc-

BT argued that the public made no objection to paying for a call to British Rail for a timetable enquired on software from Computer Consoles in the US, running on

the 400 or so authorities is needed for the project. "There does seem to be a lot of interest in the project, although some authorities manage to perform well using manual to perform well using manual to perform to the perform well using manual to perform to the perform well using manual to perform to the perform to the perform to the performance of the

SPL's new system aims to reduce Thames burrier operating costs,

by Nuala Moran

A MANAGEMENT imprimation
system which will reduce the costs
of operating the Thames flood bard
ther is to be supplied by SPL international.

The pareier is designed to tiam the Thames during a ideal affect but allow access to fiver traffic at all other times.

Il other times.
The system is based on a DEC
/a\$.11/750s II. will help avoid une

SPL gets Thames barrier job

necessary closure of the barrier, frame in the GLC's headquarters and in minimising the length of at County Hall, and will also be

and in minimising the length of each closure.

This will reduce operating costs and reduced disruption of the river at traffic.

Barrier control strategy will be determined by a mathematical model which will be based on given tidal, meteorological and river-flow conditions. The system will be linked to an BM main will be linked to an BM main.

plans to do.

The French plans – first announced in 1977 – have suffered

Alternative technologies for the call box devices include speech synthesisers and touch-sensitive synthesisers and touch-sensitive

Another possible technology, shown by IBM at Telecom 83 in Geneva in October, allows all the elements on the display to be integrated into a single chip, enabling display systems to be manufac-

Picture elements on the surface of the chip change from colourless to purple when a voltage is ap-

ity Business System money ealer's terminal installed in call oxes.

If these arrangements are ity, or for a platform ticket when they were not going to travel on the train.

The Post Office has no directories database.

Consoles in the US, running on Digital Equipment PDP-11/44 and CCI Power 5 minis. It will be updated daily from BT's ICL 2900-based directories database.

According to Davie, "there is a definite need to improve efficiency in dealing with land charges".

Lamsac has also announced a

review of computer applications in

the social services to help local

sonal records systems, once the Data Protection bill is passed.

a £2.1 million order from Mai Box for software and hardware Lamsac woos the councils by Nuela Moran

THE Local Authorities Computing organisation (Lamsac) is campaigning to drum up support among district councils on proposals to develop a computer system for land charges registers.

According to Ken Davie of Lamsac, the support of about 50 of the 400 or so authorities is needed.

Land charges registers list details of any charges relating to individual properties, for example private street charges. These are all details which solicitors require for land charges registers.

In addition, solicitors need other information relating to a property, for example, whether it is in a smokeless zone or an area of the land charges registry. It remains to be seen whether this will be included in the government proposals which will supersede the smokeless zone or an area of the land charges registry. It remains to be seen whether this will be included in the government proposals which will supersede the smokeless zone or an area of the land charges registry. It remains to be seen whether this will be included in the government proposals which will supersede the smokeless zone or an area of the land charges registry. It remains to be seen whether this will be included in the government proposals which will supersede the smokeless zone or an area of the land charges registry. It remains to be seen whether this will be included in the government proposals which will supersede the smokeless zone or an area of the land charges registry. It remains to be seen whether this will be included in the government proposals which will supersed the land charges registers.

streamline its production planique operation. The hardware will we sist of 57 HP150 touch-screen as sonal computers linked to list HP3000 minicomputers, eight a manufacturing sites and three for centralised administration and deviations of the production of the strength velopment work. . .

That's the ticket

THE Bank Settlement Plan, devised by 30 airlines to simplify ticket issuing procedures for tradagents, will be implemented at Datasouth DS180 matrix plans. These will be installed at the M travel agents that make booking through British Airways' Tan-com reservations subsidiary. authorities keep up-to-date. Part of the Lamsac Social Services Ap-

Course support

plications Group is drawing up guidelines to help local authorities work out codes of practice for per-DELTA Computer Aided Eag-neering of Birmingham has wont £100,000 contract to support Wa-ley College of Technology is in work for the Manpower Service Commission on the Open Ted project, which will set up techni-cian and supervisory level course. for learners to take at their om

BT spends

BRITISH Telecom's National Networks division has ordered £400,000 worth of Altos microcomputers and terminals from Windsor-based MBS Microtex for use in planning track services. The hardware is 26 Xenix-based 16-bit Altos 986 micro, two 186/2 micros and 124 Alios II

Checks on yachts

BEDFORD Computers' latest sale of its Yacht Prediction Programs to the Greek Yachting Association. The program runs on an Apple. In the year since its launch it has been sold in 20 countries to help check yacht designs for performance and for compliance with international off-shore racing rules. The British Admiral's Cup team is one user, and the company reckons is program has been used in designing \$10 million worth of racing signing £10 million worth of racing

Police deal

IAL Gemini has beaten Honeywell and Leases to a £1.2 million contract from South Yorkshi contract from South Torks.
Police for a turnkey command and control system. The system is to be installed by the end of next year, when it will support terminals in nearly every police station in the country. It will be based on Dan General hardware running IAL General hardware running Gemini software and it support street indexing, incide handling and message switching.

Zenith jumps into compatible market

by John Kavanagh
US television and radio giant Zenith has jumped into the IBMcompatible personal computer market with desk-top and portable

* **11** #

SALESBRIE

Swedes pick

Sperry's

\$4m giant

THE Swedish telecommunicate administration has ordered by ry's biggest and most pour computer, the 1100/92 malign cessor, which is valued at Helion. It will be invested.

lion. It will be installed

Stockholm later this year, when will support 3,000 terminals to for computer-assisted work on

management and provide backer facilities for 2,000 more.

The system will replace a pure 1 100/83s, which will be transfer.

BRITISH Home Stores has place.

a £400,000 contract with Chapus and Cash Processing of Telford for the UK. The systems are a signed to bridge the gap beams point of sale and management or a formation by providing states on item movement.

on item movement, can be operator efficiency, income pr square foot, seasonal fluctume

HP wins order

HEWLETT-PACKARD has to

BHS contract

Zenith Data Systems is just getting going in the UK and Europe, but it claims to be the world's number four supplier of

other components — and sells them to those competitors.

them to those competitors.

The company is close to winning orders for the new products totalling over \$50 million from four big US OEMs. And if its US distributors' initial order rate continues its total business from these two sources will be over \$110 million this year, compared with \$70 million from US sales of its

by George Black

THE government will announce plans in May to streamline its aid to small businesses. Junior Industry Minister David Trippier told the parliamentary information technology committee that he was "repackaging" the present 88 official assistance schemes into four or five and would complete the work by May.

"We are confusing the very people we are trying to help," he says. The new categories will retain the current Support For Innovation grouping and consolidate various advisory projects into one. He says there is no evidence of demand for the £75,000 ceiling on the amounts eligible for the loan guarantee to be lifted. The average application is £33,000, he says.

The loan scheme, which runs out in May unless renewed, has a current failure rate of 8%. But it is defended by Barclays Bank corporate manager, Peter Hornby, who claims that the failure rate is failing and will come down still further. "It is better balanced now and, given a chance, should succeed," he told the committee.

computers last year.
The new Z-150 and Z-160

processor as IBM's product. They run Microsoft's MS-DOS operat-ing system, on which IBM's PC-DOS is based. Compatibility is ensured through firmware.

On the hardware front the

number lour supplier of microcomputers costing between \$3,000 and \$6,000 — after IBM, slots, compared with two on the IBM Personal Computer. In addition two standard serial and one parallel port are built in; IBM personal computers it is one of the top two selevision manufacturers. On the software side Zenith is

elevision manufacturers.

Zenith says it can undercut IBM supporting Microsoft languages and other competitors by up to and word processing software and 21% because it makes its own the Lotus 1-2-3 modelling packscreens, power supplies and age, with its own manuals.
other components — and sells US prices start at \$2,699 for a

Small aid streamlined

ment on where the factory will be because, he says, "negotiations are at a very delicate stage. We are looking for somewhere at the right

half of this year.

Both Harris and Lanier

tory, but, Reavley says: "It's difficult to specify at this stage exactly what we will build there, we're

the small Swansca software house,

BMSL, in a deal which represents an extra income of over £30,000 to BMSL and a kick in the teeth to

Europe's biggest computer manu-

facturer.

BMSL chairman Gwyn Jones is

very pleased that the two have opted to switch. "It's a major

endorsement of our product and we are expecting more of them to follow now," he says.

price and with a high technology workforce". He expects the fac-tory to be operating by the second grating Lanier marketing operations with its own in Europe, Africa and the Middle East, bringing them under the umbrella of

The deputy treasurer of Salisbury council, Brian Coveney, says that ICL's package has not lived up to expectations and it could not

for interfacing the two product lines. Harrisnet, the LAN for the



Harris aims to manufacture in UK later this year

by Nuala Moran HARRIS, the US electronics giant, will start manufacturing in the UK later this year. Products will be for the office automation market, which it will be attacking

with its merger partner, business systems supplier Lanier.
Lanier's UK managing director,
David Reavley, is not able to com-

looking at several product lines." Meanwhile Harris is busy inte-

sion in Geneva.

Lanier offices here in the UK and in Germany will be merged with Harris subsidiaries. Plans have also been announced

Harris 9000 office system, will become the standard for all Harris and Lanier products.

ONCE AGAIN, APPLE TECHNOLOGY POINTS THE WAY.

When we made our Apple II Computer, we started the personal computer revolution. This year, we're starting another. APPLE -- BEYOND THE BARRIERS We set out, just eight years ago, to

answer a question Why should computers be large and expensive?

The answer to that question was the Apple II. Since then, we've sold 1.5 million Apple Computers. We had gone beyond the first barrier between the individual and

the computer. Answering a second question took over \$50 million of investment and 200 man years of software development.

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NOTNOTICEIT At Apple, we OFFICE SYSTEM OF THE YEAR

believe you have enough to do without mastering computer science, or ploughing through complex manuals, or learning new language and memorising hundreds

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that's intuitive.

To help you reach your full business potential. LISA - DON'T JUST TAKEOUR

WORD FOR IT Lisa technology has already won a RITA award.

on a range of machines with an entry price

A CHALLENGE TO YOUR

IMAGINATION

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nology means using the best in yourself.

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do what you can't do now,

for lack of time. Helping

you do what you thought

was impossible, in a way

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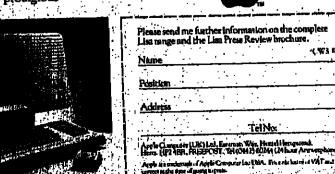
And if you return the coupon, we'll send you a compilation of press cation of the software is added to the reviews on Lisa. THE TECHNOLOGY

<u>OPTOMORROW</u> Measured even by the standards of conventional personal ourselves. computers, the new range of Lisa systems offer a prodigious

. technical specification. But, to quote from Personal Computer News:-When the incredible sophisti-

> equation, Lisa simply falls off the graph. It is not valid to compare any other machines with it. No exceptions. None.

We couldn't have put it better





tion concerned," says David

Roberts, consultant at Igor Man-

agement, of Croydon, which is or-

ganising the scheme for the

institute. "But we're not offering

to discuss vacancies with em-

ployers nor to interview short-

Many of the recruitment agen-

recruitment service, including

ment the scheme - at a

This means that the cost of

charge of £35 an hour.

listed applicants."



IUS company fetches it Olivetti Olivett

by Donald Kennett
US DATA communications firm
Network Systems (NSC) is bringing its 10 Mbit-per-second local

area network Hyperbus to Britain

— at prices down to \$250 a port. The two-year-old product joins the product that has fuelled the

company's growth to \$10 million profit on last year's \$47 million sales, the Hyperchannel 50 Mbitper-second network.

And the company is whipping up enthusiasm for its next product up the range, a 275 Mbit-persecond network called Data Pipe which it plans to launch around the end of the real

Hyperbus has been on sale in the US since 1982, but only 35 systems have been sold, mostly into sites that were already using Hyperchannel for their high-speed Gary Christensen, one of the

three ex-Control Data engineers who founded Network in 1974,

because it's higher up the hierarchy. We haven't had any competition with Hyperchannel and I think it will be the same with Data Pipe, but we don't know how big

"Many of our customers have campus type environments and very high speed applications. For IBM to do it probably wouldn't be worthwhile, but for us it is."

Hyperbus is a proprietary system that runs at the same speed as Ethernet, but until open systems standards cover a more complete range of networking acti-vities, its makers will have some

Users are in no doubt that there will be multiple standards."

Data Pipe is an optical fibre based high-speed "backbone" network that can run for 20 kilometres and can make full use of public wideband digital transmission facilities such as satellite links and British Telecom's Megastream

"I never ask them what they are going to use all that data for," says Christensen. "A local area network is a multiplexer of applications into high-speed circuits, our friends at Cray say 'what are you going to do when we have a 200 megabit channel?' and we say 'when you're there's maunicient grown for a suit, and an anti-trust si that says we're trying to domain the market."

up. It needs gallium arenident nology, VLSI to make it con mical, a protocol structure and addressing theory."
Network Systems has field

patent suit against Masses prompted by Masstor's announce Two of these are Hitachi ment that it will make its own to machines already available in the UK through National Advanced Systems (NAS) and BASF, which work boxes to run the software previously sold with Next Systems' adapters. "Then introduced them last month to compete with IBM's 4381 mainenough evidence in our mind it they're infringing on our peton' comments Christensen. "Ir The third machine is a new diadic (dual) processor from US there's a counter-suit that says it independent IPL, the 5350, which since they've never shipped an s ready to be shipped now. duct there's insufficient ground This is a three mips machine, which will form the top end of

three gaps OLIVETTI has taken three new redesigned chassis, incompatible IBM plug compatible computers with the old components layout. Olivetti badly needs to get into on board in a renewed attempt to the market and sell some machines beef up its efforts as a big compu-Jeff Evans, manager of the

revived plug compatible computer division, says that he expects to be announcing some sales soon, a result of a concerted effort by his salesforce, which can now deal solely with the computer market. He expects to gain "a significant share of the PCM business" in the

UK over the next two years and would like to see this reach 10% in some sectors, like terminal sales. He refutes recent reports that



EVANS . . . Expects "significant share of PCM market".

IDPM helps its members recruit

THE Institute of Data Processing Management is to help its members to recruit permanent computer staff. The institute will charge members a placement fee equal to 5% of the first year's salary for each programmer, analyst or data processing manager they appoint through the service. Individuals who belong to the

cies do interview and discuss vacancies. However, Igor is to offer a institute will also be able to use the service, called the IDPM People Placement Scheme, to find jobs.

The institute aims to build a register of available staff along the same lines as recruitment agencies, to match applicants with jobs.

ing someone for a salary of £15,000 would be around £1,100, assuming The register will be split into a day and a half of interviewing three categories: one for applicants n the £20,000 plus salary bracket; and consulting. This is less than 10% of the first year's salary, and a standard category to embrace the considerably less than the estabmajority of programmers and analysts, as well as DP managers; and lished agencies charge, according a traince category for graduates and people from government to Roberts' calculation.

The service is also open to the "We are offering to find the ap-

Data General pays staff to fill vacancies

MINICOMPUTER manufacturer employees recommending clerica Data General's UK operation is offering its staff up to \$1,000 if they provide leads to fill vacancies. There is also a special bonus quoted in Sterling of £250 to staff referring sales executives joining

ago," he adds. "The company puts a lot of effort into quality control."
Sisco has already interested 18
Oasis systems houses in the machine. According to O'Brien, a machine. According to O'Brien, a machine according to O'Brien, a machine according to O'Brien, a machine. According to O'Brien, a machine according to O' from Digital Equipment Corpora-tion, Hewlett-Packard and Prime.

Data General employees get

and secretarial staff.
"We find that when people are

they stay, are more productive and fit in well," explains Data Gener-al's UK and Ireland general manager, John Dougali.

In order to get the cash award, the recruit has to be on Data Genget another chance for extra cash, as their names are put in a draw for

Word firms dig deeper

that they are pushing deeper into

The 8000 is based on a 16-bit

tegrated Office System, which allows up to 24 terminals and 24 printers to share a 900 Mbytes

On the same day, and at the same venue - the Info 84 exhibition at the Barbican - CPT Cor-poration announced its SRS 45

by John Riley
TWO traditional word processing companies announced last week

allow users to upgrade painlessly and migrate to more cost effective technology."

the information processing mar- Zilog 8000 processor and offers up Wordplex launched its 8000 Into one Mbyte of main memory, and has five built-in managers slots to control workstations, files, printers, applications and communications. A medium configuration price works out in the region of £20,000.

CPT's shared resource system is based on a Zilog Z80 chip running at four MHz, and the basic price shared resource system which allows up to eight terminals to share word and data processing files on a 30 or 60 Mbytes hard disc, and also Phoenix, its new chip-packed information processing files on a 30 or 60 mbytes hard disc, and also Phoenix, its new chip-packed information processing of text.

chip-packed information processor.

The Wordplex 8000 system, which uses Wordplex's proprietary Gemini operating system, is the fruit of three years R&D.

"This is not insignificant froth," says Wordplex's chief executive Harry Mallinson, "it represents the broad architecture on which we are basing our future, and will we are basing our future, and will ware features for years to come."



How to export more council says: "There is a grown,

THE British Council wants exporters to know that it can help them get business overseas — as it has already for ICL on a £500,000 contract in Singapore.

ICL was contracted by the gov- training. ernment of Singapore to develop a centre for computer studies at Ngee Ann polytechnic.

According to Ashok Hegde, manager of strategic planning at ICL: "Singapore wanted an inte-grated solution, that is it didn't just want pure training or aca-demic standards or systems. By coodinating resources with the British Council we ended up with a unique package which the Singa-pore government had no option but to take."

The council recruited people from the UK to teach at the centre and arranged training in the UK for Singaporeans who will eventually staff the centre. Hegde explains ICL's view: "The UK leads in offering high value added services. Training is critical to this."

selves suddenly confronted and training demands. We can be because we have links with us versities and institutes, we have specialist staff and we have a me work of overseas representation 81 countries.

"This puts the council in any strong position to help UK one panles organise training." hider the Skills Gap,* a brochus with explains the services the Britis
Council offers, is now available.
The science and technology
group of the council is also helping

ding for large contracts find the

to promote the Micros in Educ tion Programme. In conjunctes with ExportIT it has helped set a exhibitions in Saudi Arabis, Spain Italy and Germany.

UK distributor markets top Spanish system

MOORGATE-based distributor Sisco is to market one of Spain's top selling systems in the UK because it is convinced that Spain will become a major micro-maker

Called the Business Express, the systems are built in Spain by Se-coinsa (Sociedad Española de Communicaciones e Informatica), the government-owned commu

nications agency in which Fujitsu has a stake. The dual processor system,

which has a Zilog Z80B and an Intel 8088 chip, supports the Oasis operating system, as well as CP/M and MS-DOS.

Patrick O'Brien, sales director for Sisco (Small Information

Systems Company), believes that the Oasis operating system still has a big future.

"Since 1979, several thousand Oasis machines have been sold in Spain. Spain has standardised on Oasis, and the best brains in Spain end up in Secoinsa.

Sisco places much importance on the long viability of the Span-ish-built Business Express. "Very few distributors are offering their dealers a profitable future that allows them to do the job of instal- and two printers, costs around ling business computers £20,000.

properly," says O'Brien.
"I equate Secoinsa with the Japanese car industry of 10 years

typical configuration including | nical support and repair centre engineers and sales executives, and \$1,000 for each subsequent refer-ral. Lower bonuses are offered for four screens, business software

a \$600 and a \$400 prize.

TELEPHONE

Bill Harvey of the educational contracts department at the British BT approvals board comes up for appraisal by Donald Kennett BRITISH Telecom's equipment approval board is up for approval itself, just as it has moved into gear in authorising telecommunications kit for attachment to BT's network. Consultancy Brian James is to report on the British Approvals Board for Telecommunications and Torde and Industry within the next few weeks, Suppliers have In the case of the interim schemes, we don't do factory darks specifications are produced unthe persymment of consultancy Brian James is to report on the British Approvals Board for Telecommunications Act provals procedures to the Department of Trade and Industry within the next few weeks, Suppliers have In the case of the interim schemes, we don't do factory darks specifications and produced unthe Department does. That British Standards Institution; rewriting team has not been idle, because there has been pleaty of what is possible to see them moving a lot faster. I have well specifications are produced unthe provals procedures to the Department of Trade and Industry within the next few weeks, Suppliers have In a jou month. The full complement and the rest are simple telephones. That the rest are simple telephones and provise promoting to the standards institution; rewriting tear produced unthe rest are simple telephones and interior use, for us, but were are four vessells, microgrouputers, either as integral earlier of us, but we as sufficient as simple telephones and the provise promoting to the first telephones and the provise provise produced unthe provise p

Suplione Dinna Pitcher 07535 56811 or Telex 849105 (CaS/1\S/I/I//I/

sion telephone to its credit for most of last year, but the number of approval dertificates it has is materialised. The seven-strong en-

SSI, but the government wants

telephones took the cream of the milk. There was a spurt where everybody rushed in and gor cracking. That ended hat sat year. But our income is derived in three parts, what we add to the test fee if someone else is doing it for us, the factory inspection fee and the certification fee.

announced a scheme for telex equipment. For cellular we shall be issuing a schedule (standard) produced by a group set up under the auspices of the Department comprising representatives of equipment manufacturers, opera-tors, BT, the government and ourelves - all the interested parties: Iltimately it will be covered by

this like yesterday."

This work has not been producing sufficient income; Vevers says.

The interim approval scheme for
telephones took the gream off the

interim approval achemes for dealer boards (used by money market and other dealers to access several databases and telephones for use at the same time), key telephones and extension telephones for use with PABXs. It has no scheme for PABXs themselves, Vevers says, because the appropriate standards have yet to become available.

The organisation was set up with a £200,000 loan from the government, the industry and BT.

But that was very rapidly spent, Vevers says. It has now negotiated an interest free loan of another

Board), which is voluntary.

"We may get more involved with indirectly attached equipment. There is a special regime still being worked out by the Department and the industry. A lot of data communications stuff is indirectly connected to the network." Vevers says: It has now negotiated an interest free loan of another £200,000 from the government ting if it is self-supporting, as well as further loans from industry to buy the sophisticated test equipment needed for cellular radio.

The items it has approved so far include one 2,300 bit-per-second modern and two versions of STC's include of the items in the support of the junior singineers leaving the support of the junior support of the junior singineers leaving the support of the junior support of the j

they earn already. But BI say that it pays engineers working of approval testing between \$9,00 and £15,000.

Salary is not the crucial factor, Vevers adds. "We don't do very well from BT because the condi tions of employment are excelled Engineers have substantial prom tion prospects and they can more from one type of job to another, have a smaller organisation when people stay on the same kind a work. There is a certain amount of travel, and it is not necessil everybody's cup of tes.

verybody's cup of tes.

Vevers is optimistic that the work is building up now. Some of the equipment submitted for approval is in the pipeline for the second time around, and the manufacturers have had a change the second time around.



And it is the property of the



HIGGINS . . . "The Compass is not a sewing machine."

Space micro unveiled

data processing
25th Anniversary Issue
1959-1984

issues and computing developments, is publishing an important special fisue

What advances have been made in computing in the last 25

In its special silver jubilee issue, DATA PROCESSING will review computing developments from punched card readers, through structured programming, distributed computing up to personal computing and networking.

DATA PROCESSING's anniversary issue will answer this

DATA PROPESSING is published 10 innes a year. Subagriculou price as CO net annum. Lamated numbers of the anniversery basic are available in the suite core price of the 40. To subactibe to DATA PROCESSING to corder tytur special ristic contain. Blend Softley Editor: Data Processing Buttersooph Scientific Limited Journals Division. PO Box 63. Westhory Flower-Bury Scientific Limited Journals Division. PO Box 63. Westhory Flower-Bury Scientific Limited Journals Division. PO Box 63. Westhory Flower-Bury Scientific Limited Journals Division. Polys 859556 SCITES.

• expert systems

• biochips

irs and the leading authority on total

Where will computing go in the next 25 years?

question by looking at:

• speech technology,

optical discs

by John Riley CALIFORNIAN micro maker Grid Systems last week launched its 16-bit portable microcomputer which weighs in at just under 11

which weighs in at just under 11 pounds, including a flip-up electro-luminescent flat screen.

Called the Compass, the micro has already been up in the Space Shuttle twice, has been used by the US marines in Grenada and Beirut, and is used by 400 US government tax fraud investigators. ment tax fraud investigators.

The machine has an Intel 8086 chip and also an 8087 arithmetic handling chip, and offers 256 Kbytes of RAM and a further 384 bytes of bubble memory for

An Intel 80186-based Grid Server links up to 44 Compass micros, including 12 ports for telephone downloading. A typical Grid Server capable of supporting 16 users costs around £20,000.

"This is not a sewing machine," says Roger Higgins, Grid's vice-president for international sales, drawing attention to the growing band of manufacturers who are

calling their machines portable.
"If you can't get it in a briefcase, can't drop it or if it needs an external monitor, it isn't portable." Higgins does not mind if the Compass is dropped: "It will survive a force of 135 g," he explains.

A military version, which conforms to the US Defence Department Tempest specifications, is also available. That version is two pounds heavier than the commercial version, and has 512 K btes of RAM and an internal fan and filter for the screen. This version filter for the screen. This version has a US base price of \$10,500.

The commercial version is being distributed in the UK by Thame Systems, which also distributes the

Onyx microcomputer.
Grid was founded in 1980 by
Englishman John Ellenby, who
was formerly with Xerox. Initial
investors included Gene Amdahl,
and Ray Williams founders of and Ray Williams, founders of IBM plug-compatible mainframe manufacturer Amdahl, and also by leading figures in non-stop Grid has sold 4,000 in the US.

US chip makers by Keith Holder US SEMICONDUCTOR manufacturers have been slammed by mini and micro maker Hewlettmemory chips.
Robert Frankenberg, the com-

pany's general manager for comthat Japanese chips are up to three times more reliable than the US

He says that "despite significant efforts on the part of the US chip makers to improve product qual-ity, the Japanese are still ahead." This is in contrast to statements

made last year by the company to the effect that the US products were up to scratch and were run-ning neck and neck with the Japa-

taken some Hewlett-Packard executives by surprise.
In a recent news release Franz Nawratil, general manager for data systems, confirms that US

He adds: "Although the company is continually looking at the quality of components used in our machines, we would not make a hasty decision, or cancel purchase

NGA and provincial newspaper owners aimed at helping the two sides reach agreement on the introduction of new technology.

National Graphical Association

members and representatives of

supervise the study which will ana-

lyse copy input at provincial news-

Norman Walker, deputy director of the Newspaper Society, says: "We will be looking at about 12 to

14 different types of copy, from classified adverts to editorial copy

coming over the wire.

HP chief attacks

about how much copy can be put

directly into computer-run

could be put directly in by edi-torial or advertising staff will vary depending on staffing levels. For this reason the survey is looking at

In the race to qualify with the company with 256K dynamic nese have been first to qualify with RAMs (DRAMs), three Japanese the company is that they have made their devices available first. firms have already crossed the line, while the US companies "The scenario governing our use of 64K RAMs showed this, and I

don't foresee any reason why it should be any different with the Quality aside, the Japanese have been steadily gaining market share with their memory devices to latest 256K chips," he says. the point where last year they achieved 46% of the world market, Hewlett-Packard buys 64K chips from eight companies at preaccording to market research comsent, four Japanese suppliers and pany Dataquest.

A company spokesman says that The spokesman said that previous pronouncements had the comments made by Franken-berg and Nawratil might differ bebeen taken seriously by the US industry, and that Frankenberg's cause they were working on different ranges, where reliability statement could be a tactic to apur it into making further efforts to 'deliver the goods" more quickly.

He admits that this might be difficult as the current high demand for chips is keeping all the major manufacturers running at full capacity, and making them sell

by Nuala Moran

A STUDY is to be set up by the

"From this analysis, we will be able to draw certain conclusions" attention the need for the industry to make the most sensible use of

STODDART . . . Estimated only 300 GPs use micros.

by Nuala Moran
A SYSTEM to speed up the reporting of adverse drug reactions is
being developed by Baric Computer Services in collaboration with

the medicines division of the De-partment of Health and Social

The sum of £25,000 has been made available to develop the system, which will initially collate drug side affects reported by 3,000

participating GPs.
A DHSS spokesman says: "The average GP probably reports about

half a dozen reactions a year, so we

won't be providing terminals just for that. But obviously there are

lots of other applications coming along, and the DHSS wants to

make sure the drug reporting and other applications are standard."

In fact there is a long way to go

before all doctors are using a micro. In a survey published last week Dr Norman Stoddart, ICI

computer fellow, estimated that only about 300 out of the country's 25,000 GPs use a micro. And he

sional, clerical and computer staff

As well as cutting jobs, technology is changing the face of society, the survey found. Nearly a third of staff questioned said their jobs had become less skilled and 40% of jobs had become more skilled.

There is a danger that we will

end up with a large group of ex-tremely skilled people and another

pension for their members.

System will speed

for diagnostic purposes.
Of those GPs using micros, 40%

use them for repeat prescriptions, 34% for age/sex registers and 34% for patient recall. Only 8% are involving the computer in doctor/patient consultation for diagnostic

The DHSS spokesman says that the department also wants to see micros used in preventive medi-

cine, such as monitoring repeat prescriptions, calling in patients for vaccinations or cervical smear

tests, and eventually for drawing

Doctors wishing to get int micros have to pay for the equip-ment themselves, though they can get assistance from the GP's Fin-

ance Corporation, which exists to help with finding premises and

providing office equipment.
Stoddart criticises this scheme

because it limits the choice of micros to two British makes According to Stoddart, this mean

members blamed new technology

common were eyestrain (56%), headache (52%) and backache

In addition 48% of people said technology caused irritability and 43% said it induced stress.

A minor statistic from the sur

agency staff. Apex says this has "significant implications" for

union members, as agency staff

usually have worse employmen

conditions than do full-time

vey is that 12% of companies us

up health statistics.

25,000 GPs use a micro. And he showed that doctors are using their micros on the market.

Apex claims 50 jobs go

by John Kavanagh

FIFTY office jobs are lost for every one created by new technology — and the staff who remain get none of the benefits in terms of extra leisure time or pay.

These force pay.

— those with jobs and those with jobs will continue to work the same number of hours."

The survey again raises the questions of whether display terminates the particle of the particle of

These facts emerge from a surminals harm health. Over 60%

vey in the Midlands by the profes- union representatives said their

union, Apex. Apex calls on unions to "redouble their efforts" to win shorter hours, longer holidays and earlier retirements on full (38%).

group who are purely machine-minders," the survey report says.

Just 3% of companies had nego-uated shorter hours and none had offered longer holidays. This

contradicts government claims

contradicts government claims

contradicts government claims

contradicts government claims that technology will lead to more leisure time, says Apex.

"What is happening is that we are moving into a two-tier society — Leader comment — page 15.

for every one created

up drugs reports

negotiate their own local agree-ments for new technology." Walker adds: "This study means we are making full and sen-sible use of new technology."

"The project is timed to run from 1982-1984, by which time we

five different newspapers, thought to be representative of the industry Results of the survey, which will be complete in April, will be made available to the other interested The survey is part of Project Breakthrough, which according to Walker is "a scheme of education unions, the general print union, Sogat '82 and the National Union of Journalists. and persuasion for management and employees to draw to their



BION ... "Grounds for optimism in 1984."

Technology for Business succeeds

TECHNOLOGY for Business, the peripheral distributor and legal systems specialist has reported encouraging 1983 results — its first as a public company.

In the year to December 31, 1983, the company returned pre-tax profits up 28% at £312,000, on turnover marginally ahead of £2.48 million. That exceeds the forecast it made in interpretations.

million. That exceeds the forecast it made in its prospectus by 15%.

Technology for Business was formed in 1981 from the UK subsidiary of Logabax, which was twice rescued by the French government. Greene & Co brought it to the Unlisted Sequrities Market last July via a 56% under-subscribed offer for sale at 100 pence.

Chairman Paul Bion says: last two years - we have grounds

for optimism in 1984."

The company used the cash raised from the market to buy business micro maker Five Technology last November

CMG forms six new companies COMPUTING services house CMG has undergone a reorganisation to mark its move beyond its manufacturing in 1985."

The £27 million per year group has formed air new companies. half of CMG's turnover comes

tion to mark its move beyond its traditional bureau base.

The £27 million per year group has formed six new companies in specialist fields, to give it a total of nine operating companies in the UK. The company also has operations in Holland, Belgium and Germany, which bring in over itself its revenue.

Ron White, CMG joint managing direction, says: "We think this sire to be centralised at its Crowden teachers, supported by four regional centrals, and the sale and supported by four regional centrals, supported by four regional centrals, and the sale and supported by four regional centrals, and the sale and supported by four regional centrals, supported by four regional centrals, and the sale and support of software products.

formation Processing Services.

The group has set up two new consultancy companies based on existing subsidiaries: CMG Information Consultancy services Central London and West London, respectively. These will specialise in management consultancy, systems design and analysis and programming.

Two vertical markets, for the motor trade and for various types of associations will be handled by CMG Information Services for Associations and CMG Information Services Motor Trade.

16 edition of Software Month, wish to make clear that Corporate Modelling Consultants Limited develops and markets the Figst financial modelling system, and not the Final system.

Micro buys cut-price disc drives

MICRO Technology of Tunkey.
Wells has signed an agreed with General Automation to act of million worth of the local Alpha-10 mini-cartridge d. drives for which General Automation is exclusive main distribution is exclusive main distribution. company to cut the end-user par of its Honeycomb 20Mbyte da drive packages by £555 to £3,1% The drives are designed for t IBM-PC market.

Stearns supplier

AM INTERNATIONAL, the U multinational manufacturer di printing machines and phose typesetting equipment, is to dusbute the Stearns 16-bit mices the UK. Popular in the US, it Stearns micro is Intel 80% basi (running at eight MHz) with one nal 8087, has 128 Kbytes RAN expandable to 896 Kbytes, an offers CP/M 86 and MS-D0 operating systems. Prices san a £2,500.

Denton to China

BOB DENTON, managing director of Sinclair distributor has Holdings, is taking a party of popherals and software supplies a China next month. "China is ser hungry for British product," a says, "but it took Sinclair for months to government in months to get government proval to export there. The Am cans are exporting 16-bit micross China now, whereas we're having trouble with anything over eigh-bits and four MHz."

hope to achieve an agreement un-der which members will be able to Intelsat contract THE international satellite con

munications organisation Intelst has contracted for \$1.2 milion worth of computer system analysis, design and development work by Computer Sciences with telemetry, tracing and networks facilities of the Intelsat VI sense satellites that are due to go into service in 1986. The contract has renewal options that could be worth \$4.9 million over there years. Intelsat VIs will have double the capacity of Intelsat V/As more than 30,000 telephone circuits.

Masterline public

PLESSEY's Masterline key tel-phone system, which handles up to six lines and 16 extensions, has been approved for connection to the public network under the De-partment of Trade and Industry, interim approval scheme.

Dataquest inquiry

CALIFORNIAN information technology market research com-pany Dataquest is to conduct is joint programme with its para-company, A. C. Nielson, to investigate the personal computer of surner market, and will mount 20,000 households quarterly its UK operations to include services to cover the printer and tele-communications industries.

VLI sponsorship

THE business microcomputer category, of the 1984 British category of the 1984 British Microcomputing. Awards will be sponsored by the VLI group of computer staff recruitment agencies. VLI says the decision to sponsor the award follows two independent surveys which found that the use of microcomputers in business was of major interest to programmers and DP staff seeking new jobs. new jobs.

Finar system

FOLLOWING the article on soll ware distribution in the February
16 edition of Software Month, we

Telecomms Bill survives Lords

pite a rough ride from the On British Telecom's right to

It was only defeated on amendments to safeguard rural services The telecomms industry's objec-

tions to the Bill have centred on British Telecom's licensing arrangements, the prospect of BT looking to foreign equipment suppliers at the expense of the domestic industry, and the issue of BT's right to manufacture.

Dealing with the licensing arrangements, Lord Cockfield, Chancellor of the Duchy of Lancaster and the minister in charge of would table an amendment for the report stage of the Bill, providing

text of the licence authorising the running of the system should go

Children and the second and the second

Manufacture equipment. Lord Mackay of Clashfern, the Lord Advocate, said that the government accepted the distinction between running a public telecomms and on the issue of telephone tapping only, although the Bill will face further amendments when it goes into report stage in March. company from that which ran the

The government is to put that policy into a condition of the draft

that there should be a clear prohibition of cross subsidies between the two activities. At the same time, Lord Mackay

stressed that the government wanted to encourage BT to involve itself in research and development.

Lord Weinstock, managing director of GEC, objected to the

industry. Lord Bruce of Donnington, chief opposition spokesman, said that Labour peers would table an amendment to provide specific protection for British manufacturers of telecomms equipment at the

eport stage. The Bill goes into report stage in the House of Lords on March 12, and the Department of Trade and Industry expects it to receive a third reading before the end of March, and to go back to the Com-

mons in April.

The government is set to change the law to relax the rules of the £4 billion British Telecom share flotation this autumn. It is disapplying sections of the Prevention of Fraud (Investment) Act and the Companies Act of 1948.

The application forms due to be telephone subscribers will not be accompanied by a full prospectus, that would be too expensive.

Xerox in **US** cuts Star price

XEROX in the US has knocked : third off the price of its Star workstation and brought in two heaper versions for standalone and remote operation. The price of the original Ethernet version is now \$9,995, rather than its previous \$15,000.

Rank Xerox in the UK has not nnounced plans to follow suit.
Star was launched in 1981 and it pioneered features such as the mouse for cursor control, symboli multiple "windows" for task man-agement and the bit-mapped screen for high-resolution graph-ics. These features are being taken makers, most notably Apple with Lisa and Macintosh. But Star has not sold in large numbers and the company admits that price has been a factor.

Apple's Lisa, which closely folbrother, Macintosh, was launched in January, a new Lisa version was

QUEUE HERE

Don't put your customers in this position by selling PCs to businesses that are liable to grow. We all know that a business might start by buying a computer with one job in mind, but it seldom stays that way. If it's bought for accounting, they'll soon get the idea of adding financial planning, word

processing and numerous other applications.

In a business that's growing that means more and more people will want to use the computer, eventually at the same time. And if you've sold them a PC they can't.

On the other hand, if you'd sold them an Equinox multi-user multi-processor system at the start, they could have expanded as the need arose.

Quash computer queues with Equinox



Equator. One of the best self-contained, multi-user, multi-processor systems available. Built to very high standards, it comes in 8 and 16 bit versions variously running CP/M 80^{rm}, CP/M 86^{rm}, MS DOS^{rm}, MBOS^{rm}, and the exceptionally powerful TURBOdos^{rm} operating system.



If your customers need even more computing power, then Equinox can help you respond.

We also supply systems for 8 and 16 users and all are compatible right from the Equator to our very largest system. Not only can you expand individual computers, you can also add extra computers connected via an Equinox network.

Part of the second seco

Our networking capability also lets you connect to a wide range of other systems and devices: Prestel, mainframes, Telecom Gold, terminals, to name but a few.

CP/M 80TM, CP/M 86TM, MS DOSTM, MBOSTM are some of the operating systems we run. And for real high-speed multi-processor networking power there is the TURBOdos M operating system.

Equinox systems are fully supported throughout the UK with a range of service contracts available.

since 1978. Bringing real multi-station computing power, performance, reliability and realistic pricing to people who need to get the job done.

EQUINOX COMPUTERS 18 Anning Street, New Inn Yard, London EC2A 3HB Telephone: 01-729 4460.

Generator will get **Euro offices**

PLANS are going ahead to set up European offices to sell the data-base and applications generator, The Sensible Solution. The database has been making inroads on Ashton Tate's dHase II territory. Originator O'Hanlon Computer Systems is planning to set up three European direct outlets, starting in

Brian Young, formerly with O'Hanlon's UK distributor, Offshore Computing, is setting up the European operation.

Solving team

BOOK publisher McGraw-Hill has teamed up with Software Arts, originator of the TK!Solver problem-solving package, to sell its TK!SolverPack applications. The packages will be sold by McGraw Hill through its campus bookshops at colleges and universities across the US. The TKISolver authors were the originators of the famous Visicale program and took the concept much further with the TKISolver package.

Firms join forces

MOTOROLA and NCR are to join forces in marketing the real time operating system, Versados, for the MC68000 processor. NCR has developed a new kernel for the operating system, which gives it an edge in performance claimed to be or the MC68000. Its main system for the MC68000. applications are in transaction processing, industrial and process control and factory monitoring.

Trade mark

will quantify probabilities. The present version of Expert-Ease, which has just gone on general release, is limited to deterministic,

Lomputer and Telecommunitations of the Hone office and the Defence Ministry.

It could also appeal to depart-THE NCC has been successful in registering its Filetab and Usertab products as trade marks. The Re-gistry of Trade Marks hearing last week decided in the NCC's favour and will publish a notice in the Trade Marks Journal to give an opportunity for objections. Legal fees, estimated last year at £38,000, were incurred by the NCC in its wrangle with Filetab Support Services over Usertab and associated languages. The suit is not yet settled; and next hearing is scheduled for October 2. Ada plans are nonsense, says language man

Interface for '80s

DATABASE house Southdata claims to be "dragging CIS-Cobol into the '80s" with an interface to invented here syndrome", according to the condition of the property of the prope bypass the coding of file handling. The interface cuts out the Index Sequential routines which are part of CIS Cobol. According to Southdata this makes it easy to adapt exist packages to produce screen forms and reports through



PC-DOS, Microsoft, for a new ar-

ificial intelligence system.
The agreement involves the re-

writing of its prototype, Expert-

Although Expert-Ease seems to

have had enthusiastic response in this country for the pre-release code, being the first PC-oriented

ing to one of the top language

Time and money spent redoing what the Americans have already

done is likely to be wasted, says
Alex Littlejohn, a director of
Leasco Software in Maidenhead.

His firm introduced Ada training

Rase, into the portable C language to allow it to generate rules which

SCOTTISH firm Export Software International has concluded a deal with the US developer of IBM's

A UK user community seems to

knowledge-based package, it is gaining international market share which will be crucial to success.

Troducts of this kind can reduce the number of questions that need to be put to applicants from a couple of dozen to two or three.

Special deals

Scots make intelligence deal

be well on the way to becoming established for Expert-Ease. Fifty

big firms are already experiment-ing with it. And the government

procurement agency, the Central Computer and Telecommuni-

It could also appeal to departments such as Social Security,

which is sponsoring academic re-search into the simplification of official forms for benefit purposes. Products of this kind can reduce

knowledge-based package, it is gaining international market share which will be crucial to success.

Therefore the link with Microsoft could be an important to be put to applicants from a couple of dozen to two or three.

It originated in the Edinburgh with University Department of the number of questions that need to be put to applicants from a copied by many US and Japanese pioneers. He admits the Michie school is in the minority but says the system is much more flexible.

dozens of compllers every two

Professor mauls Professor mauls Currys is policies of giants back to

But he had hopes that new talks

between AT&T and Berkeley

dard with the advent of System VI.
"The desire seems to be there

remarked: "Of course, Unix is not

BLACKIE . . . "Needed packaging

His two-day courses, run jointly with the Royal Military College of Science, are simed at convincing

anagers of the need for a long-

term view of software investment.

the cost of power in five years.

Then they say it takes too long to learn and I ask them how many languages their staff now use. I

encourage them to experiment with a small project first to get some practical experience."

But managers are hesitant, fear-ing that the government is not wholly behind them. Instead they will plump conservatively for Co-ral or Pascal.

This could lead to the conti-

But think of

A SCATHING attack on the software policies of both IBM and AT&T has been made by Professor Martin Healey of Cardiff University Would disagree, he added.

"AT&T did not even admit that Unix existed until it realised that it

versity.

Speaking at a conference in London on the operating system owned by AT&T, he wondered whed by Al & I, he wondered why IBM had decided to mount Unix on "an inadequate piece of hardware — the PC". He suggested that IBM's strategy was for users to buy it, find it unsatisfactory and return the IBM 3270 termination. ninals. This drew laughter from would lead to a real industry stan-

Healey said that was "a joke" and would prove far too expensive compared with its use on a supermini. IBM was "genuinely frightened" of AT&T, because it had never before had to compete with a company bigger than itself.

As for AT&T, he claimed it was now "traing "to require history" now," he said. Almost as an after-thought, he the only multi-user system in the running. Digital Research's Concurrent CP/M is far superior

and has the massive commercial pull that it can now run PC-DOS "trying "to rewrite history". The vice-president of its Western Electric subsidiary had said it had Healey is professor of micropro-cessor engineering at Cardiff Uni-

Machine Intelligence under Professor Donald Michie. The Scottish Development Agency picked it up and passed it on.

"When we got hold of it, it was still a research tool called ACLS and was just a development of a clever algorithm of Michie's from 1974 known as ID3," says

managing director Sandy Blackie. "They had added on a Visicalc-

type front-end and it needed pack-aging into a commercial form."

Blackie argues that the Michie

approach has cut out the need for lisison between the field expert and the computer specialist, which

But this time we can reverse

office machine manufaction Future Technology Systems.

Claire Gooding adds:

Future will be shead of the b. had a weapon to stab IBM in the back with."

with Concurrent CP/M, well runs on IBM's Personal Core, ter. It is the first site in delli He blamed AT&T for the proliferation of versions which had destroyed the objective of a common to test Concurrent CP/M Read system. This had led to a wave of 3.1 and plans to put it on good release in April. "As a DP man I need Unix lookalikes like I need a hole in the

"There are plenty of othern ing to implement it, but, afteri know, we're the only company be running it successfully in UK," says marketing distri David Shear. "Concurrent (7) 3.1 is a very hard test of the hardware in our experience."

The new release of the opening system, announced at Comderk November, brings the IBM-PC of der PC-DOS into the Concurrent fold, allowing multiple uses a fold, allowing multiple uses PC-DOS to run under Concum

The system uses the now oblig tory "windows" technique, wind allows the user to switch from or task or screen to another in or

Pick an **IBM-PC** link

by Claire Gooding
DISTRIBUTOR of Pick-had
machines UCL is gunning for the
Fortune 100 companies with a
Personal Computer-to-Pick in
The DataPC link allows the No share its data with a Dames desktop micro running the ht operating system and its related

"This isn't a Pick lookally, stresses Chris Holman, managed director of the UCL subsiding Universal Computer Systems. which was formed to sell the det.

What we are offering is multi-environment operating

According to Holman, the Datamedia link will make it possible for the PC to become courses for senior managers at the beginning of this year.

He thinks the intentions of UK systems houses to write their own compilers for the new US Defence mag dy ays unwillingness to sdopt foreign of technology.

Years will be a nonsense, he says.

"Ada is the machine tool of the second industrial revolution, Britons used the lathe to make goograms than theirs."

Government money would be better directed to creating target code generators and a cleaner interface between operating system and programmer, he says.

But us out of production of His two-day courses, run jointly executive tool, with the ability is tap the Pick relational database of run standalone programs under MS-COS. The arrival of Pick on the des

top Datamedia has opened up of markets for UCL, which he distributed the Pick-based Wa mate minicomputers in the U since 1979.

"What I'm interested in doing broadening the scope of the Posystems we sell," says Holman. "The Datamedia enables the Post Britania and State of the Post Britania and State of the Post Britania and Br "People will dwell on the "The Datamedia enables use array," says Littlejohn. "They be used as a terminal to the Fig. warts, says Littlejohn. "They complain that Ada cats capacity so you only hook up five workstations and response is slow. But think of the capacity so and response is slow. But think of

ing to lose and they gain a lot sep a Holman's plans do not sep a the 1BM-PC: they include the PC vendors such as Apple, Sinsi and the various IBM lockshites.

and the various IBM lookanges of the believes the advantages of giving the PC "multi-function ability" will become apparent at the PC takes on a larger role in DP.

"The most important feature is that it will save the duplication of the moment." data that goes on at the monent

data that goes on at the moments. The link costs £295 and come as an optional extra, to the Datamedia 932 hardware, which attents at £13,500 for the basic configuration of CPU. Winchest disc and magnetic tape drives, and Pick OS.

The DataPC link comes on I flooppy disc which is loaded on the line pay disc which is loaded on the IBM PC, and effectively emilials the Datamedia Excel Series 30 in the minel.

Software File is compiled by George Black

MICRO NEWS

business

Micro Systems, is to concentrate home/hobbyist area altogether. only on selling business systems, relegating the home and hobbyist machines it used to carry in its Micro-C shops to the Currys electrical shops.

of which are proper Micro-C shops, two of which are separate units within high street Currys branches - are to get a new image. Training and after-sales support are to be beefed up.
"Our initial strategy was to sell

business micros," says Currys Micro Systems marketing manager Andrew Harris, "but then the home hobbyist machines came along. They were technical products then, and we used the shelf space in our Micro-C stores to sell them. Business systems we sold through our field salesmen."

Then as the market for home computers mushroomed, and outlets for these machines moved into high street stores, the Micro Systems operation helped the main Currys group set up in-store

shops.
"We got 35 going by Christmas
1982," says Harris, "and we were
selling in competition with them
"We will aim for specific market
segments," says Harris. "There is
a feeling out there that microcomputers are a good thing, but people

by Robert Parry
HIGH street retail chain Currys is taking another shot at selling business micros. Its subsidiary, Currys
Wiss Superment is to appearance of the decided then to move out of the decided then the decided the decid

Currys has had an on-off affair with selling micros through Micromoved up and down, but has fallen lectrical shops.

The six Micro-C outlets – four promised for 1982 and 1983.

> separate premises, and then to inpast record of expansion, Harris sees Micro-C moving ahead.

"Opening stores is not a problem for Currys - it is doing it all the time. What we want is the right formula."
With the Leeds store, which

opened up as a separate unit showweek, he is sure Currys has hit the right note. The way to get cus-tomers through the door and buy-ing is to set up the stores as exhibition centres, demonstrating the kit and providing an environ-ment for training businessmen in what micros can do. "We will aim for specific market



HARRIS . . . "Decided to move out of homelhobbyist area."

Training needs to be impartial -

do not necessarily see how to fit be bought in by Currys, but Harris means to make them home-grown them into their own businesses. products from a separate division. You have to communicate with the poor souls who have to use the

Sales of hardware – from IBM, ACT, Apple and Phillips – and software will be backed up by the provision of supplies, maintenance

and training.
At first, the training courses will

Chip makers to get Japanese silicon

y Keith Holder BRITAIN's chip manufacturers are to get their own local supplier of silicon wafers — but it will be Japanese. Shin-Etsu Handotai is to build a £30 million production facility near Edinburgh which will make Shin-Etsu the first major silicon producer to set up in the UK.

Demand for silicon is on the increase, as many of the chip makers are running at full capacity to cope with the high demand for their products, particularly those used in the popular personal com-

Scotland represents Europe's largest concentration of semicon-ductor manufacturers, including National Semiconductor, Motorola, NEC and Hughes Microelectronics.

Silicon wafers will be available before the plant is finished as Shin-Etsu has signed an agreement with the Scottish Development Agency o build research and development facilities, and produce around 100 million silicon slices per year by the end of 1984, using temporary

A spokesman for Motorola says: "We are happy to see this development, particularly from a known supplier. There will certainly be potential for us to do husiness.

Construction of the plant is expected to start this year, and it will begin producing silicon next year. Around 80 jubs will be created initially, though this could rise to 600 by 1991.

Shin-Etsu's announcement follows reports of a plan by GEC to set up a similar facility, to support any takeover of Inmos, the state-

owned chip manufacturer. At present, all UK manufacturers rely on imported silicon, from companies including Wacker of West Germany, Monsanto in the US and Dynamite Nobel in Italy.

Shin-Etsu has also announce that it is teaming up with the US company Dow Corning and its subsidiary, Hemlock Semiconductor, to enhance the latter's

Vector wins \$2.5m order

by Keith Holder BELGIAN-based hardware and software supplier, Vector Interna-tional, has won its first major manufacturing order, worth \$2.5

boxes," says Harris.

Maintenance will continue to come from Mastercare, another member of the Currys group, which provides services for many of the lines carried by Currys. add-on facilities to the Xerox Mike Ruyssnick, Vector's mar

million, to develop and supply circuit boards to Rank Xerox. The company will develop four types of board for use with the Xerox eight bit and 8/16 bit personal computers. They will add enhanced graphics, IBM 3270 ter-Xerox hardware. minal emulation, concurrent eight

keting manager, says that experience gained as European representative for Digital Rethe company additional expertise to develop software necessary to interface the boards to the existing

boards have been built, they are and 16 bit programme execution and CP/M, plus programming the US.

Attractive OEM/Major

Thatcher is urged to cut chip import duties

by George Black THE Prime Minister has been urged to help small high technology businesses by cutting the import duty on chips. She was told that start-up companies are being forced to manufacture abroad because they have to pay 17% on chips where they would pay only 5% on chips in completed

The message was given at a re-cent reception at 10 Downing Street for the bosses of 30 uccessful small manufacturing companies. Among them was Co-lin Sanders, the managing director of Solid State Logic in Oxford, a

It produces computerised sound recording and electronics switching systems, 90% of which are exported, mainly to Japan.

export business you can get the import duty refunded by the government," says Sanders, "but until then it is very hard going against such duties."

Ten of those invited to the reception worked in the computing or electronics fields. They in-"Once you have got going in the

Mrs Thatcher undertook to look into the problem, but had to retire early due to laryngitis and Department of Trade and Industry secretary Norman Tebbit also left early. Previous receptions have suffered similar curtailment — the one of two years ago occurred during the Falklands crisis and the Prime linister is reported to have stayed

After the exit of the hosts, remaining ministers and their officials were pressed by James Bloomer, managing director of Bloomer Electronic Components in Northern Ireland, to cut the province's corporation tax rate.

He said that large corporations were moving into southern Ireland because of its low tax rate of 10% compared to 52% in the north. This meant manufacturers had to move south too. STC was their

such duties."

Previous calls from Britain's micro industry to lower the high duties on chips have been well received by Information Technology Minister Ken Baker, and the National Economic Development Council has urged the government cluding that of the PM.

IBM makes a big move

allow it to emulate the System 3X floppy disc.

Series.

Delegates at the IBM small systems user conference two weeks ago were particularly impressed by a demonstration of new software that enables the PC to run System RPG II recognizes.

Called Baby 34, the product costs about £2,500.

Another important new product for the PC is Executive, a report generator which allows files to be created and menus of reports to be created and menus of reports to be created.

by Philip Hunter
IBM's Personal Computer is ready
for a big move on the small
systems market following an announcement of new products that
allow it to arrustice the forces of the system and then transfer them to a System
34 mini either directly, using
18M's PC to System 3X text link
announced last month, or by

RPG II programs

This software, developed in the UK by BMS Systems of Coventry, allows

EMS Systems of Coventry, allows

generator which allows hies to be created and menus of reports to be created and menus of reports to be created and menus of reports to be delays caused by shortages of built on the PG, the System 3X delays caused by shortages of manufacture minis, and the 4300 mainframe the chips.

Motorola to offer cheap graphics

makers cheap high resolution graphics with a new chip set under development. Its raster memory system (RMS) will not be in pro-duction until early next year, but samples of the two-chip set should be available this year. "We feel the RMS will revolu-

tionise the market and set a nev industry standard for intermedia graphics applications," says Steve harsh, the company's microcor

puter marketing manager.
According to its makers, the system only needs 14 supporting chips to be implemented, and is limited in its sophistication only by the size of the main processor use

resolutions of 32, 40, 64 or 80 characters per line, and a zoom capability up to ×8. The system also creates a virtual screet display, equivalent to 15 times the screen size. This allows the user to select which portion of the display to view, and is said to allow smooth scrolling without the need to continuously change memory. Horizontal and vertical single pixel resolution scrolling is provided and up to 32 colours may be specified from a choice of 4,096.

There are eight user-defined animation patterns and 16 planes for three dimensional simulations.

Up to one MByte of dynamic memory can be accommodated and it will be possible to overlay RMS data onto an existing video o

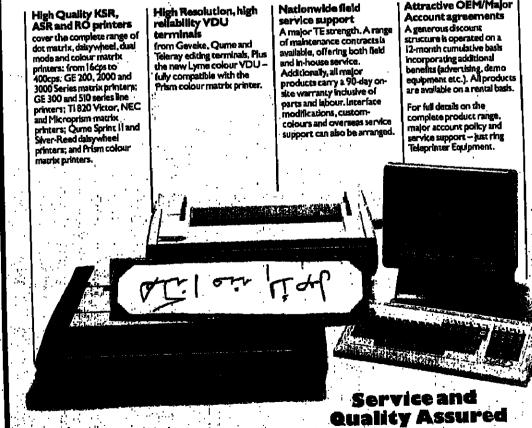
television picture.

Meanwhile, work is progressing on the company's new fabrication facility at East Kilbride. The £20 million plant is structurally company and the structural company is structurally company. plete, and production equipment could be in place by the early summer, says a spokesman.

He denies that there will be any

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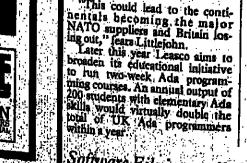
for software houses DATATRIEVE PMS TOMS BASIC PASCAL FORTRAN COBOL MACRO 32 PROFESSIONALTOOL KIT

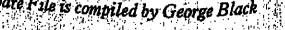
The consequent revalidation of put us out of production of dozens of compilers

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COMPANY NEWS I Immediate dealings suspended

months to September 30. Its share price was frozen at 58 pence — against a historic high of 314

Rolm wants itself

ROLM, the Californian telecommunications equipment manufac-turer, has announced its intention to purchase three million of its own shares. This would take IBM's holding in the company to around 22%. Rolm is offering \$41 for each share, and the deal is not open to IBM or directors and offer open to IBM or directors and officers of the company. IBM initially bought a 15% stake in the company for \$228 million last July. Its present holding is about 20%.

Lotus results

tion, the Massachusetts software company which produces the highly successful 1-2-3 integrated software tool for personal computers, has announced net income of \$14.3 million for 1983, its first full year of operation. In its fourth quarter, ended December 31, Lotus reported net income of \$23.9 million. Income for the full year includes an operation on revenues of \$23.9 million. Income for the full year includes an operation which is also duite likely into alloss of \$4.2 million on turnover of £73 million for the south alloss of \$4.2 million for the bank — and see their share on turnover of £73 million for the south and company which produces the have been better had STC not announced such strunning year end not urmover of £73 million for the south and the market reaction would untimover of £73 million for the south as announced such strunning year end not urmover of £73 million for the south and soltware tool for personal computers, has announced at included a profits of £538,000 for the nine months, but according to a Plessey spokesman is improving steadily. The loss was £538,000, compared with aloss of £4.2 million on turnover of £73 million for the bank — and see their share on turnover sizes.

But last week Micro Focus managed it. The group announced a one-for-six rights issue — 1.7 milion or discount on the closing on turnover up 19.6% at £872 million. The stock market might have been better had STC not announced such strunning year end not urmover of £73 million for the sult associately with a loss of £4.2 million on turnover of £73 million for the same months.

The other US subsidiary, Computer Peripherals, also made a loss of £538,000 for the nine months, but according to a Plessey spokesman is improving steadily. The loss was £538,000, compared with aloss of £4.2 million on turnover of £73 million for the pill with storming reverses is suggreed the pill with storming on turnover of £73 million o on revenues of \$23.9 million. Income of sevenues of \$23.9 million. Income for the full year includes an extraordinary gain of \$600,000. Lotus was founded in April 1982, but it did not start shipping 1-2-3 until January 1983. The company made an initial public offering of three million shares last October.

Barclays prizes

LORE Harp, president of microcomputer maker Vector Graphic was over here last July to convince the old world that her of confidence in the company.

He catalogues the company.

IBM kick the bottom out of its with IBM, was something of a vote of confidence in the company.

Revenues micro market.

Revenues micro market.

Revenues slumped, and the company still managed to lose of t convince the old world that her company was on the mend.

Last month she sent an envoy, Diok Hahn, senior vice-president, marketing and sales — and the story was much the same.

Vector has had a rough time in the last six months.

Or confidence in the company.

He catalogues the company's large installed base (20,000 systems worldwide), a product line firmly positioned at the top end of the business Micro market with strong networking capabilities, and an aggressive product de-TWO West Midlands companies, Warwick Computer Designs and ABCO Technology, have won prizes in an award scheme sponsored by Barclays Bank for small high technology ventures. They get rent and rate-free accommodation in the Barclays Venture. Centre, a £1.1 million incubator In December it was rescued by a \$2 million cash injection from venture fund Burr, Bgan, Deleage. Jean Deleage and an aggressive product development schedule among Vector from the tractions.

Vector hit trouble 18 months ago. After taking a beating from move towards 1BM, Vector Graphic has made the ago. After growing phenomenally from, as Hahn has it, "the kitchen table to a \$30 million international table to a \$30 million international as IBM: "It's like riding on the system prematurely, and then saw as long as it gets fed." building for high-tech start-ups at the University of Warwick Science Park. The awards were made by John Butcher, Parliamentary Under Secretary of State for Industry at the Barclays Techmart exhibition at the National Exhibition Centre, Birmingham.

Open Finance

IF THERE is a common complaint about British venture capitalists — other than that, like policemen, you can never find one when you want one — it is that they may understand money, but they still do not comprehend technology. Dr Richard Hargreaves is a healthy exception.

Hargreaves runs Baronsmead As
in arranging syndicated institutional investment in young technology-organies.

Hargreaves has impeccable credentials for funding high-tech ventures. He read engineering at Cambridge and completed a Phd in electrical materials science at Imperial College. After a spell as secretary to the grants committee OPEN Computer Security of Brighton has landed £500,000 venture finance from a consortium of Legal and General Assurance, Commercial Union and Cambium, the venture capital arm of Statham Duff Stoop. The company is 2½ vears old and specialises in both accounting software and energy. A healthy exception.

Hargreaves runs Baronsmead Associates, a City-based venture capital company, which manages the Baronsmead Expansion Scheme
Fund, a £1.5 million fund set up under the terms of the government's Business Expansion
With ICFC Hargreaves handled investment in start-type which has been been a financial secretary to the grants committee of the Science and Engineering Research Council, he spent nine years at Industrial and Commercial Financial College. After a spell as secretary to the grants committee of the Science and Engineering Research Council, he spent nine years at Industrial and Commercial Financial College. After a spell as secretary to the grants committee of the Science and Engineering Research Council, he spent nine years at Industrial and Commercial Financial College. After a spell as secretary to the grants committee of the Science and Engineering Research Council, he spent nine years at Industrial and Commercial Financial College. After a spell as secretary to the grants committee of the Science and Engineering Research Council, he spent nine years at Industrial and Commercial Financial College. After a spell as secretary to the grants committee of the Science and Engineering Research Council, he spent nine years at Industrial and Commercial Financial College. After a spell as secretary to the grants committee of the Science and Engineering Research Council, he spent nine years at Industrial and Commercial Financial College. After a spell as secretary to the grants committee of the Science and Engineering Research Council, he spent nine years at Industrial and Commercial Financial College. After a spell as small one; while he points out that even ICFC has difficulty in making its many £50,000 investment in start-ways at Industrial and Commercial Financial College. After a spell as small one; while he points out that even ICFC has difficulty in making its many £50,000 investment in start-ways at Industrial and Commercial Financial College. accounting software and encryption work. It says that it has a contract to authenticate electronic funds transfer in the CHAPS system. Managing director of the company, Dr David Bvereit, says Open Computer Security is talking to European banks about security systems.

uniormatics up

INFORMATICS General Corp. the software company from Woodland Hills, California, has reported income up 54% at 58.5 million, on revenues ahead 15% at \$197.8 million. In the fourth quarter the company earned \$4.35 million on revenues of \$59.7 million.

Bellman buys

BELLMAN Computing, a com-puter services company based in Huddersfield, has bought Mentor Franklin, a data preparation
Franklin, a data sociates, the company which handles promotional games for the national newspapers.

Plessey is both up SHARES in loss-making Immediate Business Systems have been suspended on the Unlisted Securities Market. The company's finance director, Graham Wiley, says it will trade again when refinancing proposals are complete. IBS, which manufactures portable computer billing systems, has reported a loss of £1.23 million in the six months to September 30. Its share

yet the share price fell 14p to 206p when the results were announced

The reason for the fall in the share price was not that the overall figures were disappointing, but that more of the third quarter growth than expected came from sales of telephone exhanges to British Telecom, while slightly less growth than expected came from other sectors.

LOTUS Development Corporation, the Massachusetts software company which produces the highly successful 1-2-3 integrated software tool for personal computation.

Scheme. The company specialises

HARGREAVES ... Exception ...

he last six months.

In December it was rescued by velopment schedule among Vec-

did well, partly because of recovery in the US aerospace industry, and profits were up 34.1% to £11.1

share price was not that the overall figures were disappointing, but that more of the third quarter growth than expected came from sales of telephone exhanges to British Telecom, while slightly less growth than expected came from other sectors.

The prevailing stock market view is that Plessey will be hard pushed to maintain the same level of sales from electronic System X telephone exchanges over the next few years. It is also quite likely that the market reaction would have been better had STC not announced such stunning year end million.

The Telecommunications Division reported turnover up 20.5% at £409.4 million for the three quarters, but profit here was up only 4.8% at £52.3 million.

The resconfirmance of the company's US subsidiary Stromberg-Carlson, which makes main exchanges and was bought on October 1, 1982. It had been hoped that this outfit would break even this financial year, but this now looks unlikely, with a loss of £4.2 million.

A capitalist with credentials

by Philip Hunter
PLESSEY's third quarter profits
were up 25%, much as expected,
were the share role follows:

Assessed and Engineering also Aerospace and Engineering also



Micro Focus asks for more

Vector drives to escape the rough

THERE can be few companies that can touch shareholders for £9 million when they already have strong balance sheets and cash in the bank — and see their share of the integral of the bank — and see their share of the integral of the pill with storming th

Though its progress in the UK Invertor who were lucky enough to pi 'k up Micro Focus share.

Burope even worse, down from that price are now 200% betteref.

SHARES TABLEM

The shares table, which is specially compiled for Computer Weekly, her selected computer companies that reflect the state of the computer industry.

4		Index 137.77	
0000	London Stock Exchange	Pence	•

business micro market.	Previo	us publish: 3/84	rd Index 134.28	Index	127.77			Change	,,136
Revenues slumped, and the company still managed to lose \$700,000 on falling sales in its first quarter fiscal 1004. Although		Pence	Landon Stock Exchange	6	auca		US Stock	1	
quarter fiscal 1984. Although Hahn is confident that the com-	16	1984 gh , Law	- Slock	Price	C'nge	1964	Stock	Price	Chi.
year, it will certainly need the round of external finance that Deleage is said to be raising. After taking a beating from IBM, Vector Graphic has made the move towards IBM compatibility. Hahn does not minimise the difficulties of living in the same market as IBM: "It's like riding on the back of a tiger," he says. "It's OK as long as it gets fed."	11 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	18 300 18	Abingworth (19s) ACT (App Corn) (19c) ACT (App Corn) (19c) Bey Kent (29c) Chibb (29c) Cole Croup (28c) Cole (29c) Betasto am (8p) Betasto am (8p) Betasto am (8p) Betasto am (8p) Exist (28c) Cole (19c) Asiamazoo (10p)	300 460 78 182 132 465 270 286 671 176 681 176 41 280 130 271 152 428 2352 428 2352 428 2352 428 2352 428 2352 428 2352 432 433 433 433 433 433 433 433 433 43	- 45 - 15 - 15 - 15 - 15 - 15 - 17 - 17 - 18 - 18 - 18 - 18 - 18 - 18 - 18 - 18	71/4 344 474 344 474 340 475 364 475 364 476 329 476 477 476 477 476 477 476 477 476 477 477 477 477 477 477 477 477 477 477	Amifehi 177 Apple Inc 2 Auto Data Pro 187 Burroughs 188 Comp Sciences 189 Comp Sciences 189 Comiss Data 189 Complare 189 Complare 189 Control Data 189 Control Data 189 Control Data 189 Datapoint 189 Datapoint 189 Datapoint 189 Datapoint 189 Data 189 Cons Gra 189 Conn Automation 189 Gould 189 Gould	24 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	一年 11年 11年 11年 11年 11年 11年 11年 11年 11年 1
leads to syndication, with Baronsmead going in with partners. For example Newmarket Venture Capital, Oxford University and N Rothschild and Sons are involved in Meta Machines.	,		rheips Lamp (F1 10) Pleasey (20) Ouean Auto (10p) Rear (Seet (19p) Thornelse (See) United Lessing (10p) FreeBact (10p) Inn Bas Sys (10p)	212 322 209 260 560 248 517 133 218 151 70 148 113 113 218	+ 3	1874 16 24 /4 17 9 /7 17 18 /4 11 18 /4 11 18 /4 11 18 /4 11 18 /4 17 20 /4 17 20 /4 17 20 /4 17 40 /4 11 40 /4 12 40 /4 12	Motorals National Semi NCR Pertur-Eimer /2 Prime M Raytheon	13 160 261	OBSTRACTOR STRACT
Dargreavez oddo that their	24	277	infec (10p) Infec (10p)	Blapd 31 240	30	Pence	New Issues	Pero	~~
bittle more work for Baronsmead in putting together a big deal than in a small one; while he points out that even ICFC has difficulty in making its many £50,000 investments pay. Hargreaves sees his place in the high-technology venture capital	18/ 7/ 120/ 120/ 11/ 24/ 24/ 24/ 24/ 24/ 24/ 24/ 24/ 20/ 22/ 22/ 24/ 20/ 20/ 20/ 20/ 20/ 20/ 20/ 20/ 20/ 20	177 120 100 100 100 100 100 277 26 206 226 226 226 227 221 221 237 218 130 78 150 150 150 150 150 150 150 150 150 150	Memory Comp (M 10p) After Bus (10p) After Coust (10p) After Focus (10p) Microger (10p)	249 31 116 256 3256 3256 213 46 213 46 213 46 213 102 88		82 75 150	Dotaserv (50) Pericam (199)	74	, ed

The table shows the closing prices in London on Friday and in America on Thursday and the charge from the previous table. Highs and Lowe have been adjusted where necessary. The Shan lake is based on a selected list of the UK companies.

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making its many £50,000 investance. Corp (ICFC) as a financial
controller.

With ICFC Hargreaves handled investment in start-ups — which ICFC defines as companies less than three years old. Not surprisingly, Baronsmead concentrates on "largish technology start-up with high growth potential".

Last month Hargreaves put E275,000 into Micro Aided Engineering, based in Norfolk, which markets CAD/CAM softward for 16-bit microcomputers. Again in Ianuary Baronsmead arranged £300,000 of backing for Meta Machines, a company issunched out of Oxford University to develop "intelligent robot systems". He deals in big money for UK start-ups. Hargreaves explains: "We really want to be involved in investments where you can see some scope and opportunity, with the Unilsted Securities Market, or the prospect of selling our stake in the business is the carrot. That greaves sees his place in the high-technology venture capital marketplace as something of a lubricant. "We help the entrepreneut is like to the money providers." he says, by getting management to shape and looking at the says, by getting management to shape and looking at the says, by getting management to shape and looking at the interesting institutions, which do not have the incilination, the resources, or the infrastructure to look properly, at every worthy (echnology start-up. "We are helping them make investment decisions," claims Hargreaves can be incilination, the resources, or the infrastructure to look properly at every worthy (echnology start-up. "We are helping them make investment decisions," claims Hargreaves. Curiously, Baronamead Associates is a good example of the very process it is in business to encourage. It was inself a start-up in the business start up in the prospect of selling our stake in the prospect of selling the process in the says, by getting management th Company News is compiled by Dave Madden

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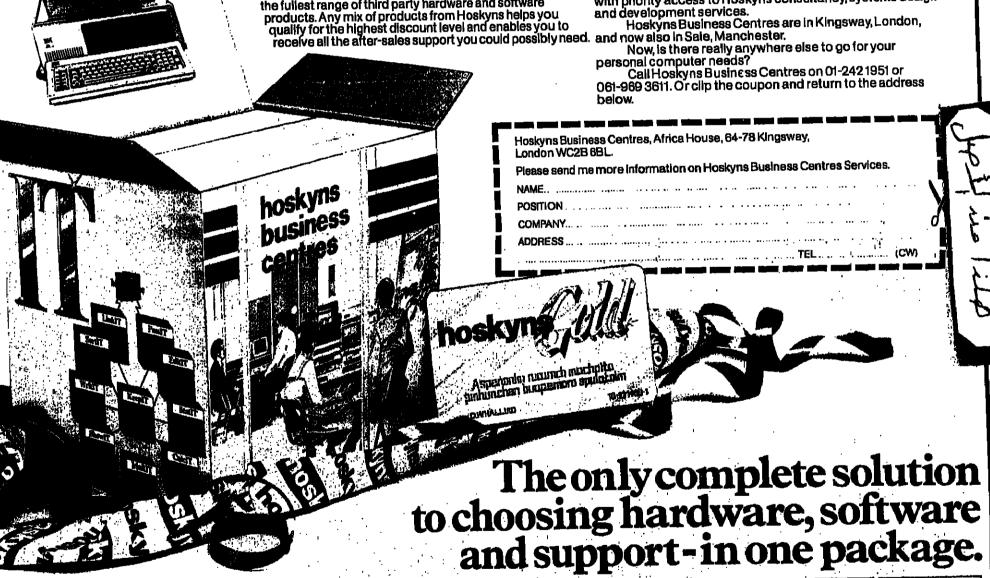
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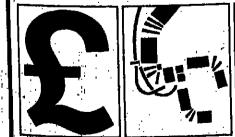
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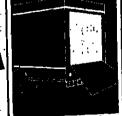
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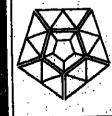
elements in the ITSoftware range or with other leading products like Lotus 1-2-3. ITSoftware also focuses on the vital





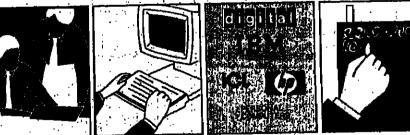
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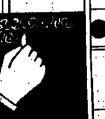


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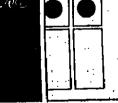


TURNKEY









EDUCATION

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MARTIN MARIETTA Martin Martette Data Systems

PLATFORM

Who's to police the law on illicit kit?

CAN you imagine arriving at work, finding a large number of British Telecom vans outside, and a heated discussion taking place in reception which you avoid - but when you arrive in your office you find there more managers than you believe existed, all after your

You soon discover that, during the night, your new inter-office electronic mail system, which runs overnight on a microcomputer with an auto-dialling modern, has developed a small fault. Somehow, the wrong number had been repea-tedly dialted all through the night and, by a cruel stroke of fate, it just happened to be the local BT manager's home.

By 8.30 that morning, the BT engineers had traced the calls and established that, although your modent was BT approved, your auto-dialling program was not. So by 8.45 all your company's outside lines had been disconnected because of the "illegal use of nonapproved apparatus'

You protest that "the program was so simple it couldn't have had a bug" or that "the modem salesman never mentioned the need for autodialling system ap-proval". But it fulls on deaf cars. If that makes you uncomforta-ble, how about this?

You're on your way home and. as you turn into your road, you see a police car and a BT van outside your house. You enter anxiously

> There is nobody, apart from British Telecom, to police the law, and that organisation shows little public inclination to do so

and the policeman explains that your non-approved modern, which you had built last week from a kit, had developed a fault which had caused the live mains to be shorted to the telephone line. A BT engineer working on the line had supervisor tells you it is unlikely his lads will allow you a telephone ever again. The policeman says you were lucky not to be ans-

wering a manslaughter charge.

Does that worry you? It ought
to, because even if the modem had not been yours you could still have

ended up as the victim. So how can all this arise? Until

PUZZLER 10 YEARS AGO FOLLOWING the recent FROM COMPUTER WEEKLY

SO LATE?

tribution (January 19), here's addition sum. See page 78 for solu-UK received letters warning of price increases of up to 10% within six months . The Hos-

WHERES OTHER+ DOLLAR



dems were either a BT monopoly or were tightly controlled. Installation was complex and equipment connected to the modern had to be approved. What is more, it was all

very expensive.

Now everything has changed.

Modems are freely available,
installation is only a matter of "plug in and go", and they can be connected to anything with an RS323 interface. And costs are There are still laws and regula-

tions - many tougher than before - which have to be complied with before equipment can be used on the BT network. These regulations are particularly important where they apply to modems which are mains-powered. Mains electricity has to be kept away from the telemust be protected from the telephone line which is now regarded as potentially hazardous.

Even the safety of the new style sockets is open to question now. The result of all this is that the

cost of compliant equipment increases - in design, in manufac-ture, and in obtaining approval. rules but, as it is legal to sell non-

approved equipment, many others do not with the extra advantage of being able to sell at a lower price. This can be motivated for financial reasons, but happens just as often because the complex rules are neither known nor understood.

The situation would be better if greater publicity was given to the regulations, potential hazards and penaltics. Users of non-approved disconnected. But the problem is that there is nobody, apart from British Telecom, to police the law and that organisation shows little public inclination to do so.

ware needs system approval.

Fohn Waddell

ment to become widespread, why should honest suppliers continue

John Waddell works for a leading

communications company.

So how do you protect yourself was a training organis and your company? If you have bought, or are about to buy, modems: check if they have green do approval labels. If they haven't ask why not. If you have bought, or are about to buy, a computer system which auto-dials: get

THE OBIO FROM
NARWICH IS.

written statement from the supplier as to whether your soft-In the final analysis, whatever the regulations, the network be-longs to British Telecom. If BT allows illegal practices and equip-

Fairbairn – vociferous critic who runs the NCO

rious training for the director of the National Computing Centre. The stout maker has had a stable product line for a couple of hundred years. The products that the computer director has to moni-tor are lucky to live a couple of

years.
But David Fairbairn, dividing his energies between offices in London and Manchester and between industry and government, has little time to reflect on such ironies. He now knows the M1 as well as anyone in the country,

by George Black

keeps a flat in Manchester as well as his home in the South, and philosophically resigns himself to having no weekday evenings of his

Fairbairn is a militant Wet. ommitted to interventionism and vociferous critic of modern-day Conservative policies. He is one of those relentless proposers and scheme-hatchers whose letters evoke a sigh of dismay from the senior civil servants - though he concedes "they might often like to try my ideas but don't have the

One of his latest brainwaves is that programmers could be moved from one company to another for a transfer fee, like footballers. It may sound far-fetched, but he thinks it could be one way of overcoming the current chronic shortage of skilled manpower.

Government and industry would collaborate to train programming and systems analysis staff, and would then put a price on the head of the trainee - maybe £1,000 after one year, £2,000 after two years and so on. Thus the private irın could get back its investment in training and the buyer could claw back some of its payment if it

The notion is still in its infancy, but if he finds a lot of support Fairbairn will be causing more head-shaking in the corridors of power at 1 Victoria Street.

Lack of training is one of his favourite hobby-horses. He blames the country's biggest companies such as GEC for having adopted a negative and short-sighted policy towards training for the industry. as well as towards research and

FAIRBAIRN . . . "Automation is the only hope of reviving British industry.

"The trouble is they have been insisting on a three-to-five year payback on their money, which is not a realistic approach to the com-puter industry," he says. "They have to think of the state of the industry and of the market in 10 Few British firms did any staff

training for the industry and fewer still did more than provide for their own barest needs. Far too many relied on poaching new gradustes from the big systems houses like CAP. Shortages were

Already some of the industry majors, such as Ferranti, were saying it was staff problems rather than cash problems which were der way. shibiting their growth rate.

Fairbairn, one of the UK's foremost Japan-watchers, contrasted the British approach with that of Japan. "The Japanese fewer software companies than we do - 1,200 against our 3,000 - but their big firms have a very high proportion of staff vorking in software. Fujitsu has 15,000 software engineers and NBC and Hitachi maybe 10,000 each. And they have progressed beyond our distinction between analyst and programmer." In his view, Japan has excepcentury.

tionally good communications between industry and government compared to Britain. They have specialist civil servants who grow up with an industry and are not hifted every two or three years. And one should not be deceived by the modest expenditure figures put out by the Japanese industry de-partment (MITI).

"In 1981 we discovered they were coming to the end of a sevenyear project on software tools that had had between £70 million and £80 million pumped into it. And that was just the beginning, before the fifth generation effort got un-

The Japanese had developed close links between academic life and the market and were a step ahead of us in this respect. The British university computing syllabus was in danger of becoming out of date and encouraged "esoteric system building" rather than prob-

One result was that some computer graduates could not find jobs in spite of the skills shortfall, "The Japanese are bidding very high because they have identified computers as the key to the not "There is still time for us be

it right. Our industry is at shoe the stage that cars were in 1895." The Japanese plan to have their software invasion in 1866 1987, he says. They have but concentrating on developing and cations of a very high quality at will not show their hand until to are absolutely ready. Then the will come in as they have in our industries with a policy of edercutting by 15%. They if maintain this whatever the is ponse until they have dominal

the field — then prices will 🕮 Pairbairn is not sure that & British government has yet appr ciated the central role computer power will play in the industrial struggles of the future despite its constant endeavour of information Technology Minister Keaneth "And yet only a few years a

the government was not ext convinced we had any need of a indigenous computer industry.

It only rescued ICL becaus?

Sperry had been allowed to buy?

ICL might have been shut dome
and all the public sector insultations would have been in danger.

DOWNTIME

Don't do as I do

READERS who long for a return simed at the smoker," states the to the old values will applaud letter.

TO YEARS AGO

FROM COMPUTER WEEKLY
OF FEBRUARY 28, 1974: In the week of a General Election the Press Association installed its own Digico installation, two 4K Micro 16s; to process the results shouting of the increased cleaning and air conditioning costs caused by smokers, along with damage to furniture and early retirements due to ill-health.

"We intend to constantly remind you that smoking is bad for you and for those poor individuals around you who have to suffer your constant smoke-laden and ash-ridden presence."

My first thought on reading this amazing diatribe was that someone by smokers, along with damage to furniture and early retirements due to ill-health.

"Stop smoking how, and make"

"We intend to constantly remind you that smoking is bad for you and for those poor individuals around you who have to suffer your constant smoke-laden and ash-ridden presence."

My first thought on reading this amazing diatribe was that someone in power at Systime had given up due to ill-health.

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"We intend to constantly remind you that smoking is bad for you and for those poor individuals around you who have to suffer your constant smoke-laden and ash-ridden presence."

My first thought on reading this around you who have to suffer your constant smoke around you who have to suffer your constant smoke around you who have to suffer your constant smoke around you who have to suffer your constant smoke around you who have to suffer your constant smoke around you who have to suffer your constant smoke around you who have to suffer your constant smoke around you who have to suffer your constant smoke around you who have to suffer your constant smoke around you who have t

TA SELWING

AFKC-TION!

price increases of up to 10% due to ill-health.

"Stop smoking now, and make missive, marketing facilities man-ky as Group reported annual turnover of \$2,2 million, a 38% profitable place to work. This is been anoking for years and hasn't increase.

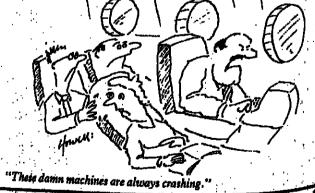
TRY CCHQ

READ THE

CHELTENHAM

YOU CAN'T

MESSAGE



Reservation

amingeon of small print: "We reserve the right to provide products
which do not accord exactly with
the descriptions and illustrations
the descriptions and illustrations
to pearing in this leaflet."

It goes on to gush: "With adoption of the protocol it is likely to
become a de facto standard."

Without adoption, it will not, of
course.

On the boards

BRITISH TELECOM has pounced upon an American nerwork protocol from Microcom and alms to make it the standard for file transfers between micros.

The glossy brochure carries a smidgeon of small print: "We resorve the right to provide products which do not account a production to the provide products of the provide products and the production of the provide products and the production of the provide products and the provide production of the provide products and provide products are production to the provide products and provide products are production to the provide products and provide products are provided by the most unit come piece of casting the print come p

dent, Trevor McNunn, must be of a strange production scheduled for mid-March site.

Traverse Theatre Club in the burgh. Enutled "ZX n. 1" at play "stars ZX81 with Total McGrath."

LETTERS

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, March 1, 1984

THE European IT programme Esprit is now underway after months of nail-biting and cliff-hanging while the Ger-

man and UK governments have used it as a pawn in ob-

And about time too. It is reprehensible that such a far-

sighted if relatively poorly funded effort to set the European

IT industry on its feet was ever used in this way - let alone

for so long. Luckily the impetus of the programme, which

has been building up since 1980, has not been deflated,

We applaud the aims of Esprit and the efforts of Viscount

Davignon to get it off the ground. The programme seeks to

ensure that Europe marches in step into the next computer

generation with common underlying technology. That can only be to the good. If it works it will benefit the appalling

technological balance of payments deficit, and boost jobs in

Of course, there will be problems. A true European

common market comparable to that of the internal markets

in Japan and the US can only come about when barriers

Cynics say that such a common market will never come about due to the "Balkanisation" of Europe with its en-

trenched national attitudes. Maybe, but if working on the

Esprit programme can encourage young R & D staff to

Then when they get into top positions the process of

Compared with IBM's annual R & D budget of over £1.5

billion, the European Commission's half share of the Esprit

programme, £400 million over five years, is paltry. But

compared with our own national Alvey initiative it is at least

Davignon, who started the ball rolling, is a strong

contender to become the next President of the European

Commission. Let us hope that a combination of Davignon

and Esprit will also help create a better attitude of awareness

Be constructive, Apex

A NEW report published this week and claiming to high-

light the "unacceptable face" of new technology says that 50

office jobs disappear for every one that is created by new

The survey, carried out by Apex, the Association of

Professional, Executive, Clerical and Computer Staff, cov-

ers the Midlands area, defined as stretching from the Welsh

border to the North Sea. Questionnaires were sent to all

Apex senior staff representatives in the Midlands, where

Trade unions are concerned that the new technologies

We do not, however, have much sympathy for so-called

Rather than the unacceptable face of technology, that

kind of claim is the unacceptable face of statistics. It is well

known that employment in the Midlands has suffered ter-

ribly over the past few years. Apex's survey, however,

seems to use a finger in the wind approach so as to cast the

Last year, Len Wells, president of the Association of

Scientific, Technical and Managerial Staffs, hit out at the

way trade unions are associated with negative attitudes

towards the development of the British economy. His re-

marks came at a time when his union was issuing a report on

how the UK can best stimulate research and development in

the engineering industry. At the time, we praised ASTMS

Apex's recent report is not so constructive. A study into

THIS week's example of the strange things people say about computers was sent in anonymously, with a request that the £5

soes to Oxfam.
The other controversial issue is whether the International Monetary Fund should allocate more Special Drawing Rights (SDRs) to members. SDRs are simply microdots on the IMF computer which can be swapped for currency.

The Times

the effects of new technology needs a much more thorough

statistically based surveys claiming that 50 jobs are lost for

are used to create wealth rather than just eliminate jobs. We

there are a total of about 25,000 members.

agree with that principle.

ame to fit its arguments.

for taking a constructive approach.

approach than that taken by Apex.

1984 and all that . . .

every one created.

new money rather than a reshuffling of existing resources.

such as currency and language have been transcended.

collaborate, these attitudes will begin to break down.

although it has come dangerously close to that.

Esprit is money

well spent

taining agricultural budget reform.

the long term.

change can only accelerate.

for IT in Westminster.

technology.

Protection Bill fears

IN reply to Charles Christian's item on data protection (Computer Weehly, February 9). I would dispute that the forthcoming legislation is likely to cause any considerable increase in the cares of a DP

manager.
The National Computing Centre recently completed a project for the European Commission which involved a considerable number of countries where legislation is already in force. In no case did we find any substantial cost or worry had been engendered and most computer users regarded data pro-

The actual registration will have to be done, but judging by the present Bill, this will not be a complex operation. The number of requests by data subjects for information is very low in European countries (1% of the subjects is a liberal figure).

cause any violent upsurge in staff

There is no argument about whether a fee charged is "excessive". The maximum will be specified by the Minister. There is no dispute either over what is a 'reasonable' time to reply. It is laid down in the Bill as 40 days.

Good security is vital to any DP department. Far from regarding additional security as a "burden", I believe that DP managers would welcome it. Any reasonable safeguards introduced to prevent misuse of personal information will oring the advantage of also deterring misuse of data sensitive to the

The fears expressed about the present Bill stem from the difficulties placed in the way of the registrar and of the data subject rather than any hardship placed on the computer user.

Views on the OTC market growth

I READ with interest Dave Madden's article on Bleasdale Computer's forthcoming OTC flotation, and the ensuing account of the UK OTC market (Computer Weekly, February 9).

As former consultant to Harvard Securities for five years, we have been intimately involved with the development of this market, and it may interest your readers to know that the origins of that connection that the origins of that connection go back to my review of the Anglo-German Foundation's 1977 Report, Financing of NTBF's (New Technology-Based Firms) in the UK and FDR, published in Computer Weekly of March 31 1977 in an article or still deficient for Civit 1977. article entitled "Time for City to back new technology" (a senti-mental undiminished in its importance today).

The project with Harvard later the project with Harvard later became known as "OTC for NTBFs" between us. This company itself was started and specifically formed as a management and financial consultancy in information technology, to develop and promote, among other things the provision of OTC-raised finance for young technology based companies, as covered in a further item, "Castell's new venture offers scheme to assist young growth companies" (Computer Weekly, November 9 1978).

With or without the Business
Expansion Scheme, I believe that
the most important effect of the
now dramatic growth of the OTC
market will be in teaching small market will be in teaching small businessmen in this sheltered nursery (but nevertheless fully public) environment how to be-come big businessment how to use quoted paper to grow by acquisi-tion; how to promote themselves and Great Britain Ltd interna-tionally, and how to lobby and intionally; and how to lobby and in-fluence the politico/economic

Copyright law and software

in the US are not necessary or de-

sirable, both to clarify certain bor-

derline areas and to remove any

conceivable arguments that soft-

ware is not already covered by copyright law. Under existing UK law, all soft-

ware pirates are liable to pay

damages in full to recompense the loss of the copyright owner from

unauthorised copying of software.

and that under section 21 of the

copyright act 1956 a software

taken into account. But there is

Another solution

THERE is another solution to

Puzzler (Computer Weekly, Feb-

ruary 9): one die has the faces:

space, 1, 2, 3, 4, 5; the other has three ones and three sevens. The

faces showing the sevens would

The Editor welcomes letters com-

menting on subjects published in Computer Weekly, or on original

certainly be unusual.

Hampshire SO4 5GR.

NTT 7M1).

Northwich

more consistency in format (eg

IVOR J. SMITH

IOHN DEXTER

and comments on the legal action to say that copyright law reforms brought by Lotus Development Corporation (Computer Weekly, February 16) for alleged software along the lines recently introduced piracy in the US. However, I was dismayed to read your suggestion that software is not already protected by copyright law in this country. Few, if any, legal com-

رود د موسولات و المواسوس و المواسوس

mentators would share this view.
The Whitford Report on UK copyright law published in 1977 states quite explicitly: "We feel that existing categories of (copyright protection) are sufficiently wide to cover programs al-ready. The Green Paper on

lietstra (Computer Weekly, Feb-

The seven formats quoted have,

I believe, been reduced to six, since the early XXX 9XX (eg in

Norwich) has been replaced by new codes of format XX9 9XX or XX99 9XX.

formats is constant. The six dif-

ferent first parts were considered

necessary to preserve the established city district numbers, subdi-

vided where necessary (eg Liverpol L19, London W1M and

London WCIR) and to provide for

the large (but sparsely populated rural areas (eg PA85 covering the

Most other countries have only four (eg Norway) or five digit postcodes (eg France), but these

operate at a much higher level

nearer to our area/district/sector

only. Canada is the only country,

as far as I am aware, that has a coding system of a similar level to

Isle of Harris).

The second part (9XX) of all the

Computing and the post – a final comment A FURTHER comment may be of interest in relation to the last paragraph of the letter from M. L.

These aspects are not likely to

R. A. ELBRA Senior Consultant, Security and Privacy Division

DR STEPHEN CASTELL Essex CM8 3LT.

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365,00 Lisgos INTERLINK 24, Dering Street, Landon W1 Tel 01 629 9681 01493 8361

copyright law reform published in 1981 shares this view. This is not penalty of £2,000 for each instance

It is only by educating users that the unauthorised copying of soft-ware is both legally and morally wrong that the investment in the software industry in this country can be properly protected. The role of newspapers like your own is extremely important in accurately bringing the current state of UK copyright law to the attention of

users generally.
ROGER TUCKETT Senior Commercial Lawyer

NCR not the only centurion

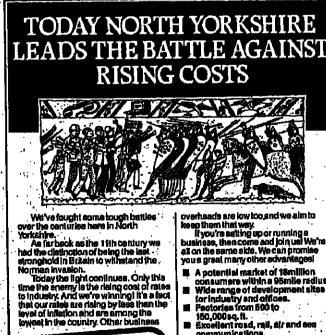
NCR IS to be congratulated on its centenary but, in its claim to be "the only computer company that can count to one hundred" it may not be strictly accurate and is certainly being less than generous to erstwhile friends and partners, El-liou Brothers (London) Ltd, later Elliou-Automation Ltd.

"The Brothers" started making later made parts for Babbage. It could therefore have made a similar claim when the National Cash Register Company was a mere stripling of 16.

Elliotts has long since been swallowed up in the GEC empire, but the name lives on in EASAMS. You may say that this is not relevant because EASAMS are only nitials, but so also are NCR. EA SAMS will celebrate its bi-centen-ary in the year 2000. I hope that the brains there will use the next 16 years to think of a really appropriate retort. **ERIC HUGGINS**

topics. All letters must be accompa-nied by the writer's name and address, not necessarily for publica-Stoke Poges





Mike Cuff 0609 3123 yous great many orner soverages:

A potential market of 18million
consumers withins 95mile radius
Wide range of development sites
for industry and offices.
Fectories from 500 to
150,000sq. tt.
Excellent road, rail, sit and see
communications.
Good labour relations record.

Low rates and operating costs.
Financial incomives available at North Yorkshire ROOM TO GROW

HARROGATE • MALTON • MORTHALLERTON • RICHMOND • RIPON • SKIPTO SCARBOROUGH • SELBY • THIRSK • WHITBY • YORK and surrounding countryst

Liveware File

































Raymond Wright (above) has been appointed general manager of Vational Advanced Systems UK. Before joining NAS he was managing director of United Financial Services, a subsidiary of United Leasing, one of Europe's largest computer leasing companies. He has also worked for DEC (Europe) and IBM (UK).

Datac of Altrincham, Cheshire, has appointed Stuart Allison as senior sales executive to cover the South. He has experience in sales and engineering with Sperry, Scottish Daily Record, Centronics and most recently with Cable and

Manager, systems technology at Marcuni instruments is now Geoff Blyth. This role has been created following Marconi Instruments' acquisition of Quest CAE, Ferndown. Blyth was formerly a product manager for Marconi Instruments' ATE Division.

Ricky Leah, formerly account manager (Southern region), as UK sales manager. Before joining Ashton-Tate in March 1983 he had find the professional sales executive with Racal-Decca five years' experience in sales.





brochure. Office Automation

Management Overview is a one-day course on March 13, June 1, September 5 and December 10, costing £155 plus Vat. Developing Distributed Systems

Management Services.

MIan Morris (left) has been appointed a director of P&O Computer Services from his previous position as head of its bureau division. He retains direct responsibility for the company's bureau operations. John Adey (right) has joined P&O Computer Services as a marketing executive for its business systems division with responsibility for the Midlands and North of England.

CONFERENCES I

Pergamon Inforch announces two state-of-the-art tutorials in London during March. The Software Process from March 14-16 will be an examination of the current fragmented approach to software engineering. It is priced at £460 + Vat. Further information from Pergamon Infortech on Maidenhead 39101, ware engineering. It is priced at £460 + Vat. Further information from Pergamon Infortech on Maidenhead 39101, ware engineering. It is priced at £460 + Vat. Further information from Pergamon Information techniques in practice. This is also priced at £460 + Vat. Further information from Pergamon Information from Pergamo

will make a rare visit to the UK to present Meyer on Cryptography,

1984

at the City University, London (7th & 9th April 1984) EXPERT SYSTEMS EASTER SEMINAR

at the Polytechnic of North Londo (24th & 25th April 1884)

We have airanged two intensive two-day briefings on the latest advances in Artificial intelligence (Al. Expert Systems have brought Al techniques to the forefront of information technology; and there is mure to come.

ignorance of new developments has saver been a visible option for any one in the computer industry. So why not spend a couple of days at knowledge of knowledge-based systems? or more details, write to:

Courses Organiser: WARM BOOT LIMITED 23 Terrington Gardens Landon N11 2AB

Ben Salama who is to head the Arthur A. Massicott is now Information Services Division of senior vice-president, field opera-Sphinx, has been working with tions and marketing at Lexidata, Unix for the last eight years. After and will direct international operafour-and-a-half years at the com- tions, including Lexidata Ltd, the puter systems laboratory at Queen company's European headquarters Mary College, London, the first located at Basingstoke. Derek Unix site in this country, he joined Saunders has been appointed Bell Laboratories as a full-time consultant, and before joining Sphinx, he worked for ICL as a UK, and replaces Bruce Blain UK independent consultant responsi-ble for the implementation of Unix

■ Digital Research has appointed ■ Following the reorganisation of Andy Wightman as OEM systems ADP Network Services into three manager (Europe). He joins from divisions - corporate services,

WCyberaid, an independent software house specialising in IBM Systems 34, 36 and 38, has strengthened its marketics. strengthened its marketing team computer industry since 1968, by appointing Pam Franklin as a when he joined General Electric, marketing executive. She has which became Geisco, on the worked in sales and marketing for several years, mainly for the Vesside. He stayed with Geisco for 14 tey Group, and joins Cyberaid serious sales management from CIS, where she was an acpositions, and last year was appointed regional sales manager for

> ■Vernon Adams joins Aston Technology's support operation, and is primarily responsible for supporting Aston's Pick operating system and applications generator, System Builder. Adams joined Aston after leaving the Systems Development Group of Geest Computer Services.

manager, who will continue to focus on building Lexidata's

financial services and industry ser-

European distributor network.



Ramtek has reorganised its European operation and has appointed key personnel in the UK and Netherlands

■Michael Belas has joined Aim's Professional division as sales man-Chalke as European marketing the newly-formed Motorola to ager (Southern), and assumes manager to set up exclusive coun-overall responsibility for sales development of the Aim Charter range of professional software and puter. He joins from Dynabyte systems for the legal profession in where he was European marketing Southern England and Wales, manager. His previous experience Prior to joining Aim he was product manager (legal systems) with includes seven years with Hewlett-Packard, for four years selling systems in the City to banks, in-Star Computers and was previously with Butterworth and Oyez Computers. surance companies and commodity



Ramtek has reorganised its European operation and has appointed key personnel in the UK and Netherlands offices. Peter Still (left) is promoted from managing director of the UK subsidiary to managing director, European operations. Joining the UK office are Len Griffiths (centre) as European distributor sales manager and Steve Scorse (right) as UK sales manager. Expandirector of European operations.

ager, Southern region. Par September 1982 until he jud Motorola's UK subsidiary, a worked out of Dallas, Tens fa as acting national sales manage. domestic US and then as minu! accounts sales manager.



~ **% E** F ...

#John Lowe has been promoted to sales director of Computer Peripherals (Systems) exclusive UK listributor for the Telex Corporation's range of IBM 3270 compatible terminals. Chris Delve, former sales and marketing director of Computer Peripherals (Systems) becomes group operations director Computer Peripherals Ltd. Lowe was formerly national sales

(Systems) which he joined from Nexos where he was national sales manager and was formerly marketing manager with IBM.

Dicoll Electronics has formed a ustomer service department and John Duckenfield (below) who headed the company's engineering repair facility, is promoted to customer service supervisor.





■Burfyl Ap Gwilym (left) and Reza Dowlatshahi (right) have been appointed sales directors by Geisco, the UK operation of General Electric. Appointed sales directors by Geisco, the UK operation of General Electric. App Gwilym has responsibility for Geisco's markets in banking and finance, energy and construction, manufacturing and operations in Ireland. He joins from Philips Data Systems where he held management responsibilities for computer systems and videotex businesses. Dowlatshahi is responsible for sales of international business systems to UK industrial companies. Previously he was with Geisco's European headquarters and before joining Geisco in 1979, with IBM

based in Swindon, is appointed to computer manager, then computer services manager.

planning and design of computerised information systems using database technology, is appointed the newly-created post of technical in a part-time advisory role as an services manager of W H Smith associate with Spicer and Pegler Cable Services. He joined W H Associates management consultancy, while continuing to pursue tions manager, later becoming his own consultancy practice. Dr Olle published a book on Codasyl

Dobbins as director of international operations based at the headquarters in Santa Clara, California. He will be responsible for all Versatec international operations including subsidiary com-panies in the UK, West Germany, France and the Benelux, Jan Geusens, Versatec's first director of international operations, has been appointed director of international market development. Both moves reflect Versatee's heavy emphasis on worldwide expansion in CAD/-CAM markets.

المراجعة والقبل ويستحينها والمتقاني والمتالك

■Barry Towers has joined Rediffusion Computers as a Teleputer salesman. Previously he worked at Office International as a DP/WP salesman and prior to that, 1980-82, he was a salesman with Gestetner. Syd Hobbs joins Rediffusion Computers as a senior analyst consultant for international mar-keting, based in Moscow. For the past three-and-a-half years, he has worked as a consultant with Euroco Computer Services.

■David Gayler, computer scr-vices manager in the management planning and design of computer Technology Ltd has planning and design of computer Technology Ltd has manager in its public sales department. He was previously a senior consultant with Scicon.

> ■Ken Hardy has been appointed distribution divisional manager by Microvitec. He joins from NCR where he rose to area systems

■ lim Timmons has joined Computer Automation's Commercial Systems Division as area sales rnanager to head the Scottish sales operation. He will be based at the newly opened Scottish office in Airdrie, Lanarkshire. Timmons spent ten years with Olivetti as a sales manager in the UK and Scotland. He also worked for CMC Microdata for four years as sales manager for West Scotland, and prior to joining Computer Automation was with Philips Business Systems, again as a sales manager.

■Roy Foster has joined Delta Data Systems at Welwyn Garden City as systems support manager. He was previously at Geisco in Kingston as a product support

EAdrian Moss has joined Peachtree Software International as support consultant. He is part of the UK team responsible for quality assurance standards. He was previously project systems analyst at Burroughs Machines.



■Tom Askwith (above) has joined Thorn EMI Micrologic as manufacturing director. Previously, he was at STC, most recently as projects manager with STC Components at Harlow, Essex.

Martin Wells has joined Sension Scientific, Northwich, as sales and marketing manager responsible for the company's range of data com-munication, data acquisition and control equipment. His previous career was in technical liaison and sales with the Water Research Centre, John Caunt Scientific and Centronic Sales.

■Esab-Lincoln Automation, Stevenage-based robot are welding equipment manufacturer has ap-pointed two new area sales managers bringing its UK total to six. Alan Collett will be responsible for the Midlands area and David will service the North. He has previously worked in technical sales and marketing of capital welding equipment.



Manufacturing Data Systems International (MDSI) of Ann Arbor, Michigan, has established a European headquaters in Frankfurt-Main, West Germany and former managing director of MDSI Deutschland Juergen Selig (above) has been appointed manager, Europe. A co-founder of MDSI Deutschland in 1975, Selig assumed responsibility in 1980 for German-speaking areas and in 1982 for Scandinavia. He has also provided the management for Ap-plicon's Central European region since its takeover by Schlumberger

■Alex Williamson has been ap pointed field engineering manager for Scan-Optics. He has spent seven years with Ragen International, providing hardware and software technical support on Scan-Optics equipment.



■Duke Ebenezer (above) has been appointed director of the EMI Detatech, from engineering manager. Based in Wells, Somer-set, Dr Ebenezer will be responsible for all R & D activities, major OEM contracts and the planned expansion of the division. He joined the company in 1978 as de-velopment manager for data products, after spending five years with Burroughs in the UK. He hails from Sri Lanka.

DIARY

MARCH 5-9 Peachtree Basic Accounting Systems. Course, Peachtree training centre, Maidenhead. £115 per day plus Vat. Further details from Richard Moore, on 0628-23711.

8100 Operating. Compower course, Training School. Can-nock, Staffs. £315 plus Vat. Further details from course administrator on Cannock 2511.

Controlling Software Project.

Keith London Associates' three-day seminar. £450 plus Vat. Further details from Pat Cox on 07073-30114.

MARCH 5-8

Basic Under VSPC. Compower course. Training School, Can-aock, Staffs. £210 plus VAT. Further details from course administrator, on Cannock 2511. nistrator, on Cannock 2511.

nistrator, on Cannock 2511.

MARCH 6
Fourth Reading Spring School on Expert Systems. BCS Reading. BCS members £10, non-members £25. Contact Alan Staines, 89 St Marks Road, Henley-on-Thames.
Software for Expert Systems. BCS Expert Systems Group. Gustave Tuck Room, University College London. 6.30.
System Generators and Pro-

System Generators and Productivity. BCS London Northwest. Kit Grindley. Monksdene Hotel, Harrow. 7.45 for 8.00.

MARCH 6-8 VS APL Fundamentals. Cocking and Drury three-day course.

16 Berkeley Street, London W1.

£300 plus Vat. Further details from Alice Ingle on 01-493 6172.

MARCH 7 ITEC New Work Trust. BSC Bristol. C. Brett. St Vincent Rocks, Hotel, Bristol. 7.15.

New Antics System. Computer Arts/Displays Group. Alan Kitch-ing. BCS headquarters, London. 6.00. Contact R. A. Barnshaw on 0532-431751, ext 746/6109. Note

change of date,
Mighty Micro, Magic or Madness, BSC Humberside, David

Firnberg, BCS president. Grange Park Hotel, Willerby. 7.30. Reslism in Computer-Generated Images. BCS Displays Group, BCS headquarters, London. 2.00. Contact R. A. Barnshaw on 0532-431751, ext 7462/6109. Note

change of date.

IT in the High Street. BCS
Kingston, Alan Jacobs, Sainsburys. Conference Room 1,
Kingston Polytechnic. 7.15 for

Electropic Funds Transfer. BCS Sussex. F. J. Hooper, Barclays Bank. Worthing College of Technology, Goring-by-Sea. 7.15 for 7.30.

Wordplex. BCS Merseyside. G. Lennox. Faculty of Science Lecture Theatre, Liverpool University, 6.00 for 6.30.

MARCH 8

Text Analysis with Databases. BCS South Essex. David Baker. West Cliff Hotel, Westeliff-on-Sea. 7.45.

Course on April 5-6, July 9-10, and October 11-12, costs £285 plus Vat and is for managers and senior DP staff. Communications in the Rightles is a two-day course costing £285 and will be on April 9-10, July 2-3. October 10-11 ARTHICIAL INTELLIGENCE WEEKEND ing £285 and will be on April 9-10. July 2-3, October 10-11. Developing Online Applications, a five-day residential workshop, costs £630 plus Vat and is for shalysts, senior programmers and project managers involved in implementing or evaluating real time systems. The dates are March 12-16, April 30-May 4, June 18-22; August 6-10, September 24-28, Nov 12-16. Getting to Know Your Micro is a two-day course tosting £275 plus Vat. It will be held on April 30-May 1 (directors, and senior management only), June 19-20, August 16-17, October 18-19 and December 6-7. Further information from Cherry Bigmore on 01-633 0866.

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Cellular radio makes an explosive impact on the 80s

Enthusiasts already envisage wrist phones for the masses and portable pocket telephones, says Bohdan Szuprowi

CELLULAR radio services, the first of which went on the air in Chicago last year are seen as one of the control Chicago last year, are seen as one of the fastest growing and most that are presently possible. In New matically switched to the next base that are presently possible. In New lucrative husinesses in communications, and are expected to de-velop into a multi-billion dollar industry before the end of the de-Enthusiasts already envisuge radio could increase this to

wrist phones for the masses and portable pocket telephones, but more astute industry analysis see it primarily as a business service. Monthly subscription costs are in the order of \$150 and although these may come down to about \$70 in the contract of \$150 and although these may come down to about \$70 in the contract of \$150 and although these may come down to about \$70 in the contract of \$150 and although the contract of \$150 and \$150 an in a few years it will be hard to beat which the service operates. The calls to be handled within the area

York City, for example, the conventional mobile telephone service handles about 700 subscribers who already experience considerable delays. Introduction of cellular 100,000, eliminating delays and offering more reliable service and

nnection.

Cellular radio technology is pritransmitting only to radio telephones within its boundaries.

Within the next two years cellular radio services will be available in most of the 30 largest metropolitan areas of

the US

the ubiquitous pay telephone even it it costs 25 cents for a local connection.

Cellular radio technology is pri-

number of subscribers at about 15,000 in the first year increasing 7 500% to 90,000 in 1985.

initial revenues from cellular radio service are not expected to exceed \$30 million but are projected to rocket by over 480% dur-

later but will average about 86% a year during the 1980s. Link Resources forecasts ,360,000 subscribers by 1990 and

yearly revenues from cellular radio services of over \$1.1 billion, but other projections expect even more explosive growth to about 2,000,000 subscribers generating

> Within the next two years cellular radio services will be available in most of the 30 largest metropolitan areas and most other areas of the US are expected to have the service before the end of the decade. But, despite this rapid growth and potential steady revenues the cellular radio industry presents relatively limited investment opportunities and did not attract as much venture capital as some of the other high techno-

Still other studies suggest

3,000,000 subscribers by 1990

paying a total of \$6 billion for the services, and by the year 2000 the revenues of the overall cellular

telephone industry are estimated to exceed \$30 billion.

Sales of switches, control sta-

tions, and mobile telephones are

expected to boom in 1984 at about

\$800 million but will peak at over \$1 billion in 1986 when the bulk of

itial installations will be in place.

This is because cellular radio is pasically a highly regulated industry, initial equipment costs are reatively high, and there are still many uncertainties about the

cach Cellular Geography Area of which one is reary the local telephone compare which any independent ope will have to compete at operate. As a result for a teleareas there are 180 open

Such a huge potential market attracted dozens of communications carriers originally headed by AT&T racing to acquire operating licences from the Federal Commu-This means an average is: of only about \$5 million page in an overall billion dolls on when and if it develops us. 20 hardware manufacturers the end of the 1980s.
Given those limitations was supplying the equipment needed to operate cellular radio systems.

Communications are somed

Perhaps the best investment

companies in this category.

tential in the shorter termion

the cellular radio equipment of the cellular radio equipment o

supply the specialised equipa to get the industry on the

American Cellular Network

Cellular Technology area

this business, but the bulk of

information technology at Leicester Polytechnic. For suddenly information technology has become eminently respectable in higher firms using highly effect switching equipment may my good investment potential their growth beyond the miniplosive phase will be limited acquisition of other service. Last October about 20 polytechnics, with full backing from the government, introduced information technology degree courses alongside their more traditional consolidation of operate computing science and electrical American Cellular Systems (L and electronic engineering Scanning, Millicomp, and k

The idea of these new degrees came up in 1982 - designated Information Technology Year by the government. Some 25% of the funding went to just 25% ling went to just one of the 20 computing and engineering, strong links with industry and some extremely advanced research

wood was running a computer centre; now he is senior lecturer on

BSc and MSc degree courses in

It is one of the UK's leading centres of research into communication between humans and machines, both in the office and

40 MSc students for the four manmonths they spend on an industry project as part of their course.

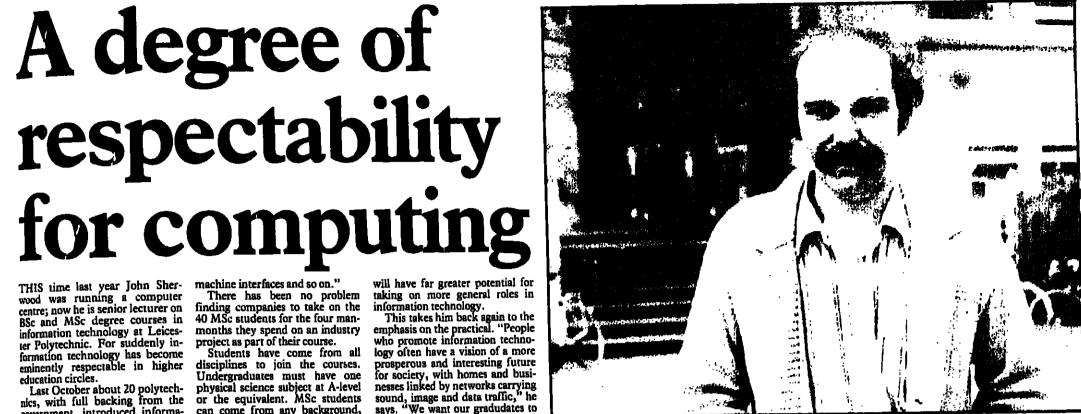
Students have come from all disciplines to join the courses. physical science subject at A-level or the equivalent. MSc students can come from any background, although they must prove they can absorb technological ideas.

Only four of the 40 MSc stu dents are women in this first year pointing. There's no reason why women should not be just as successful as men."

The courses are run jointly by the schools of electronic an or so polytechnics: Leicester. This electrical engineering, mathstaff in relevant disciplines such as graduates study software engi neering, database and data handling, microcomputing, manmachine interfaces, communication and networking, including th integration of voice and data communication, plus information tech

Graduates in information technology are now in the making at about 20 UK polytechnics . . . John Kavanagh reports

This takes him back again to the emphasis on the practical. "People logy often have a vision of a more prosperous and interesting future for society, with homes and businesses linked by networks carrying sound, image and data traffic," h says. "We want our gradudates to



SHERWOOD "We want our graduates to have vision - but jobs as well."

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Mobile telephone systems offer ease of operation and worldwide count

This network has not been thrown together, with cable and sticky tape everywhere

the factory. On the microelec-tronics side it has a high reputation in voice input, image processing and factory plant control.

Sherwood is one of a dozen new staff taken on to run the courses.
They include people from industry
with no teaching background. In
addition some teaching is done by
existing staff in related disciplines.

Sherwood describes the eventual graduates as information technolots. "They will have an overview of what is going on in an organisa-tion and will advise their management on the broader aspects of

tremendous opportunities just waiting to be seized by manage-ment, to the overall benefit of the There is no threat to computing

science people or engineers. "Specialists are very important," Sherwood says. "We need the computing scientists and the electronics engineers to design the computers. They have in-depth nowledge of specific areas.

The information technologist has a broad knowledge of computing without going into such nitry grifty detail, plus an understanding of how the company or organisation works.

"For example, there is a strong software element in the course, but we stress the idea of software engineering. Our students learn how to produce robust systems which are properly designed and constructed and which have proper documen-tation so they can be maintained

by other people.

They learn a lot more than how to program in a particular language; they have to appreciate the environment in which it will be used and look beyond the programming department to the wider needs of the organisation, man-

same areas, plus project skills and hardware. The emphasis is very much on computing and commuthree hours a week on each of hardware, communications and software engineering, plus two hours each on database and manmachine interfaces.

Much of the course time is spent using equipment. There are syn-chronous and asynchronous terminals and a wide range of microcomputers all around the school of electronic and electrical engineering, linked by an Ethernet-type local area network.

computing," he says.

"Usually these are separate and the people involved in each one don't talk to each other. But the convergence of computing and communications means there are viewdata terminal and a telephone than a supplier of the convergence of computing and communications means there are viewdata terminal and a telephone than a supplier of the convergence of computing and communications means there are channel simulator for demonstrat-ing telephone traffic. The DCXs stand next to each other, but are linked by a wide area network so one of them can simulate a remot

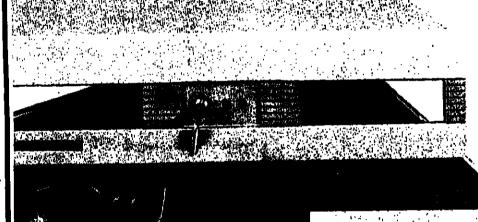
> tal Equipment PDP-11/60 This network has not been

thrown together, with cable and sticky tape everywhere. "It's tempting to do it all on the cheap,"
says Sherwood. "But our students
are going out into industry when
they leave here. We've set them a good example by creating a well-engineered physical environment, with proper cabling, trunking, furniture and so on."

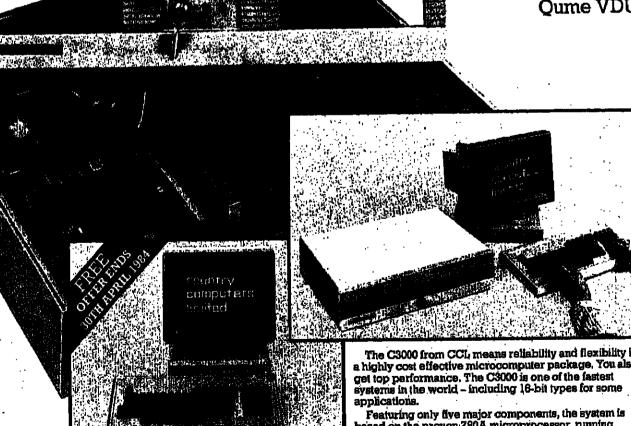
The first MSc graduates in information technology will come on the jobs market this year; BSc people will start appearing in the mid-1980s. They are expected to find jobs initially as programmers, database administrators, network supervisors and hardware techni

Some are specialist jobs, but Sherwood says that because of the graduates' broad knowledge they

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How to win this costly war against electronic fraudsters

form or another for a very long time. In the Middle Ages, a messenger would commonly bring with him a token known to be the property of the sender in order to confirm the authenticity of the message. Codes and ciphers have been used since the earliest times to make the contents of a message nintelligible to any but the in-

elegraph in the last century prought a new dimension to this em. Now any engineer could ap the line and read and record comparative case and, given

with electrically transmitted in ormation have increased with cations and computer technology. Now online systems with dispersed multiple terminals are common. It is in the banking field, which is already heavily dependent on electronic funds transfer, that the risks are most evident. The huilding societies building societies, commodity dealers and similar operations will be similarly vulnerable as new technology is introduced.

In Britain, few such organisa-tions currently employ stringent information security techniques as a matter of routine although the Midland Bank and Barclays Bank are understood to be experiment-ing with the American Data Encryption Standard (ONE) incryption Standard (DES) tech-

The technology of the 80s may make the "office in the home" a reality. Unfortunately, it offers similar opportunities to those bent on electronic sentings.

Incre are two sides to the problem. One is the risk that information which has a high value can be
obtained by enemies or competitors — often without the knowledge of the owner. This is
particularly relevant in government and defence and, in the commercial world where, for example,
proprietary information relating to
new technical developments or
plans for financial deals is
involved.

In designing a system from scratch, security should be considered from the outset, with the software selected. the terminals located in such a way as to minimise. the risks

The other risk, that of intrusion, is that information or data may be illegally inserted into a system in such a way as to mislead and influence the actions of a recipient or, in the case of a computer, to instigate a transaction of advantage

It is difficult to obtain hard facts concerning the incidence of computer fraud because the victims usually, and understandably, are at pains to avoid publicity for fear of losing customer confidence.

of losing customer confidence.

However, a recent Daily
Telegraph report estimated that
British industry is losing "anything between £500 million and
£2.5 billion a year" in this way.

reductions in losses through fraud.
Having assessed the magnitude of the threat, the next step is to identify the points of weakness in So what can be done to prevent the system.



ing or passing over common courier systems may be vulnerable

to tapping. Commonly available test equipment and terminals pro-vide an easy means of exploiting

Users entitled to use terminals

on the system may exploit weak-

ability to effect payments or trans-fer funds from one account to

Modern-day operating systems are often packages of great complexity and to verify absolutely the

secret data paths) is not a practica-

The possibilities for unauthord access to and interference

A messenger at NatWest Bank: still the most secure method of commu these abuses of modern technology and at what cost? As in many fields on electronic espionage and fraud. of endeavour, it is dangerous to There are two sides to the probgeneralise but, since no one would welcome publication of the specific

wetcome publication of the specific security measures used to protect their information, there is no alternative. Readers should have little difficulty in relating the generalisations to their own situations.

In any engineering problem, it is necessary to define the user requirement and in the case of security this means assessing the threat. The old stage "you get what you pay for" holds good in most specialist fields, and information security is no exception.

security is no exception.

There is little point in installing a system which would defeat the KGB in a situation where the real threat is that posed by an avari-cious technician armed with a

be achieved by well-organised available, if expensive, equipment of considerable sophistication. Threat assessment is not an

carrying electrical signals radiate electromagnetic energy (le radio signals). Such signals may be intercepted and recorded at considexact science, and system users may feel uncomfortable about discussing the subject. It is, however, the only foundation on which a cost-effective information security system can be built. The alternative is to saying that say erable distances from the installation using relatively straightforward equipment and an For example, French researchers recently claimed to have read signals from a printer three floors away. This is a very real risk, often overlooked in the commercial world, to which many governments pay close attention. Whilst it may be difficult to relate directly possible losses through fraud with the loss of information, there are other considerations. alternative is to assume that anyone attempting to break the system will have access to the inost advanced technology available. This approach of expecting the worst is rightly adopted in government circles ar very considerable expense. In the commercial world, it is usually necessary to relate the

How many customers would remain with a bank if titrails of their accounts and transactions or those pf. other customers were made public? The potential for mischief, adverse publicity and blackmail is obvious. real reductions to the costs of in-demnity insurance or to estimated reductions in losses through france

these weaknesses? Clearly, in de-signing a system from scratch, security should be considered from the outset, with the software selected, the cables run and the terminals located in such a way as to nise all the risks mentioned.

In the case of an existing installation, it is rarely possible either to replace everything and start again, or to remove the system from ser-vice for a significant period.

There are, however, a number of techniques which can be em-ployed at moderate cost, to reduce of a system to either information The most obvious way of

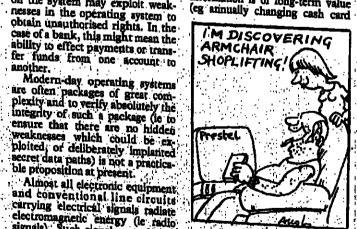
reventing either intrusion or in-ormation loss by a wire tap lies in the use of encryption techniques. Much has been published on this subject in recent years, and systems managers might be forgiven for concluding, depending upon which technical journals they read, either that simple software algorithms can provide an acceptable level of protection. ble level of protection, or conver-sely that no commercially available

data encryptors are fully secure.

In reality, the adequacy of an encryption technique in a given situation depends upon the resources assumed to be available to those attemption. those attempting to break the system in terms of both crypto-analytical expertise and computational power. If we accept the existence of the former, then the encryption algorithm must be such hat its solution is computational not feasible using the assumed resources, and within a timeframe

Thus, a relatively trivial tech-nique could be quite acceptable to protect information of ephemeral Circuits passing through unpro-tected areas, either within a buildvalue where the key is changed daily. Such a situation might exist in the case of a system controlling the movements of a fleet of secur-

On the other hand, where the information is of long-term value (eg annually changing cash card



government and commercial strategy) or it is not feasible to

preakable encryption system is that known as the "one-time pad". in binary form, such a system may are implemented by arranging to add to the message oir by bit, using modettle two addition, a kan dom stream of bits. At the redom stream of bits. At the receiving end, a copy of the same random key stream must be held because it module two addition of the key stream to the cipher stream at truly and a stream to the cipher stream at truly and a stream of the stream at truly and a sign and is never reason, and age and is never reason, and age and is never reason, and is sign and is never reason, and is sign and is never reason, and is sign and is never reason. The software both at the terminal we counter be the main weakness in the terminal we counter be the main weakness in the from a number of disadvantages.

The term one-time pad arises from a popular, manual implementation in which pads of keys are held by users and each page is used

once only.

Clearly, such a system would be very difficult to employ where large amounts of data are to be

Let is not possible to the standard terminals.

A preferable, high-integrity. transmitted. Practical data encryptors therefore generally rely on complex hardware software algons to generate permutations and substitutions of data bits in an order determined by a periodically changed key (typically of up to a few hundred bits).

This algorithm either operates directly on blocks of data (block cipher) or generates a long pseudo random key stream which is mod-ule two added to the message stream (stream cipher).

A direct attack on such a cipher ssuming that the algorithm is known, requires that a key stream is generated for every possible ver-sion of the periodically changed key. These key streams are then matched against the cipher stream, using every possible starting point,

> Communications circuits are best protected by the use of fibre optics to replace

conventional copper circuits

It is worth noting that the deoment of a computer-based test for unencrypted data is itself a non-trivial problem. Weaknesses in cipher design or in the method of use may, however, lead to other ways of breaking the system.

mentation is the stream cipher plementation is the stream cipher because the system can be designed in such a way that a single bit error in the cipher stream causes only a single bit error in the deciphered data.

The security depends on the pseudo random sequence, the design of which is a complex problem, and on the length and life of

lem, and on the length and life of the key. These factors determine the computational power and memory size required to break the cipher in a given time by the direct

To take an extreme example, i has been estimated by the National Physical Laboratory that if the so-1000 memory elements, the physical memory would occupy a space 10km high over the whole of the earth's surface.

If the principle concern is with the prevention of intrusion rather than information loss - and this change the key frequently (eg in man walkbe to in the case of a bank; that more powerful algorithms be very effective in providing the must be employed.

The only theoretically untreakable encryption several is required protection.

The principle here is that

whenever an attempt is made to access the system; an interactive authentication routine is initiated to confirm that the terminal in use is a member of the system (ie not an intruder) and if necessary, that

by-line basis so that the introde ing system can be achieve

tion modules nor the count

system is often the best work mproving security on an edge Protection of a complex spi

vith those parts of the system These are CRT-based termina printers, and data circuits in the case of terminals and printer, special versions are available with

drivers are now readily available, including RP shielded versions. Another significant advantages libre optics is that the circuits

There is little point

in installing 2 system which would defeat the KGB where the real threat is that posed by an avaricious technicia armed with a home

The high bandwidth darking istics of fibre optics, and the min rity of the technology, now make a preferable alternative to con for many applications on some of price and performance alone. leaving aside the security isste.
The advantages of modern communications and com technology are many. But like

no doubt that they put many or

nisations at risk, often with

their knowledge.

Providing total security on s Providing total security when at aystems, particularly when originally designed with security mind, may be extremely difficult mind, may be extremely difficult and expensive. In most distant with the losses which conotherwise be incurred.

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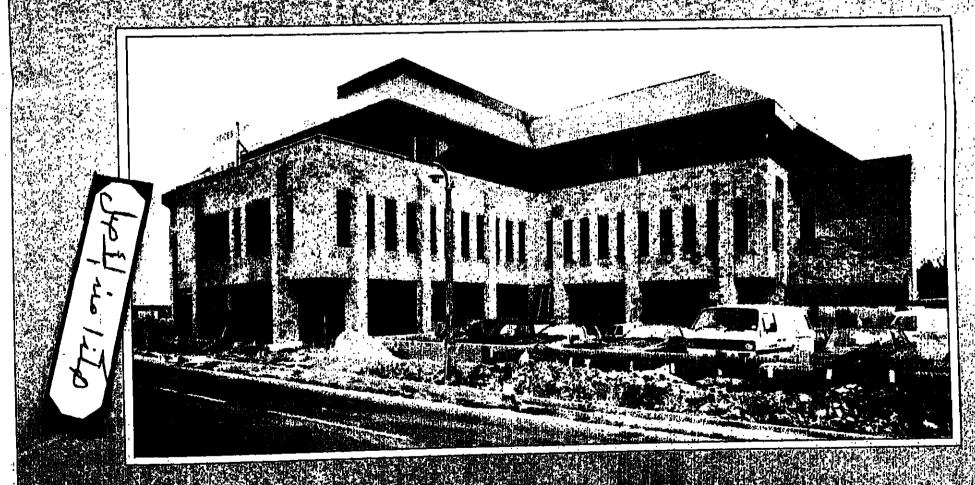


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Let's get mailboxes moving

NCC's Paul Wilson says that its recent study on mailbox systems recommends immediate action

MAILBOX systems will have a dramatic impact on productivity and effectiveness and should the most advanced user organisations. It is clear that when a mailand effectiveness and should therefore be implemented by UK therefore be implemented by organisations as quickly as possible. This is one of the conclusions of a recently completed study of mailbox systems jointly funded.

This is characterised by less concern with processes and more with getting things done; and Aeronautics Requirements
Board (EARB) and the National
delegation becomes more common and employees are more flexible Computing Centre (NCC).

conclusions are presented as a ken down. series of "recommendations for the effective deployment of mailbox systems in the UK" in an appendix of a new NCC publication Introducing the Electronic Mailbox.

Mailbox systems work by providing the individual with a personal mulbox through which messages can be prepared, sent, received and filed. Incoming mes-

and responsive: the demarcation This and a number of other lines within the hierarchy are bro-

The net result of this changed corporate philosophy is more effective team working; better decisions based on more relevant upto-date information; improved customer service and faster pro-

A survey of 34 mailbox products currently on the UK market was received and filed. Incoming mes-sages are deposited and held in the NCC study, and identified that mailbox until they are accessed at a most contemporary mailbox time and place of the recipient's systems are designed to facilitate informal, unstructured commu-The potential impact of mailbox systems on productivity was idensystems. This kind of use software which can be easily modi-

duct development.

However, such benefits are intangible, difficult to measure and do not make a direct impact on an organisation's profitability. Alternatively mailbox communication can be structured so that specific

The study identified 13 different types of applications for structured mailbox systems including the control of branches, transaction processing, education and training, project teams and working parties, the running of meetings and communications between customers and suppliers.

Such experience that has been gained of structures to date, has indicated that there are many possibilities (the NCC study identified over 100 generic types) and that specific applications in particular organisations will probably require

today and lay the blame on the lack of an appropriate programming

The product survey conducted in the study asks suppliers to estimate the number of mailbox users of their products. The results showed that there are about 105,000 users of these 34 products worldwide and that this figure is growing rapidly. However, when estimating total worldwide mailbox useage, it must be remembered that the survey did not cover two other, probably larger, com-These are:

mailbox products not sold in the UK (and probably used mainly in

mailbox systems which have been developed internally by orga-

the Office Systems Division at the National Computing Centre.

Organisations and systems taking part in the international mailbox recommendations on | semination of January 1984

Zynar/Nestar network Zynar internal Plessey system Datapoint Datapoint Electronic Mail Texas Instruments Texas Instruments Inc. MSG ystem Mailnet Computer Sciences CSC Notice Geisco's Quik-Com System Milepost Business British Telecom NE internal

anet CL internal systems Bell Northern Research Bell Northern Research Cocos Komex from GMD (West Germany) Rank Xerox

Xerox Internet STSC APL plus SIG Icebox DEC Digital internal (all-in-one) Usenet NPL Scrapbook & Edit Systems HP's internal HP Desk Hewlett-Packard Manager network New Jersey Institute of

Technology
I. P. Sharp Associates Stockholm University Computing Centre -

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7,600 31,000

NCC's Zynar network

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and any other PICK system. Zebra 2500 and 1500 – full of ambition, these Families have different problems to be solved.

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UK requirements for the effective deployment of mail-

The strategic application of mailbox systems will result in a significant improvement in the profitability and competitiveness of organisations — though the full impact will not become apparent until organisations have developed new cultures that take advantage of the new medium.

Recommendation: UK organisations should be encouraged to implement mailbox systems and to be a provided to the profit of the new medium.

mplement mailbox systems, and to implement them quickly.

Despite the importance of the concept of structuring to the effective deployment of mailbox systems, the current level of knowledge of this subject is very low. Most of the work in this area is currently being those at a few contrast in the US. This area is currently being done at a few centres in the US. This project has identified very little work of this nature being undertaken in the UK at the present time.

Recommendation: A UK mailbox structuring research program should be initiated immediately. This should concentrate on applied research with the results being transferred rapidly to industry and compared applied research with the results being transferred rapidly to industry and compared applied research with the results being transferred rapidly to industry and compared applied research with the results being transferred rapidly to industry and compared applied research with the results being transferred rapidly to industry and compared to the research with the results being transferred rapidly to industry and compared to the research with the results being transferred rapidly to industry and compared to the research with the results being transferred rapidly to the research with the results being transferred rapidly to the research with the results being transferred rapidly to the research with the results being transferred rapidly to the research with the results being transferred rapidly to the research with the results being transferred rapidly to the research with the results being transferred rapidly to the research with the results being transferred rapidly to the research with the results being transferred to the research with the results being the research with the research with the resear

idustry and commerce - preferably via a mailbox commi-

Mailbox systems need to be written in flexible, high level, communication-oriented to be written in flexible, high feet communication-oriented programming languages so that they can be easily written and modified at will. Existing languages do not possess such features and consequently they slow down the development of mailbox systems and, more damagingly, constrain the addition of new structures.

Recommendation: Research should be carried out to establish what features are required of a high level, mailbox-oriented language. This should take the form of first establishing the many requirements that have already been recorded in the literature, and then building on those. Once a definitive set of requirements has been established, an appropriate language for use in the UK and elsewhere should then be developed. Very few of the mailbox systems currently on the market last

use in the UK and elsewhere should then be developed.

Very few of the mailbox systems currently on the market have any structuring facilities, nor the flexibility to allow new attructures to be incorporated.

Recommendation: Suppliers should be encouraged to develop new products which provide structuring capabilities.

Recommendation: The UK government's Software Products Scheme should take this requirement into account when considering applications for funding the development of proposed mailbox systems.

majloox systems.

The power of a communication system lies in the number of people that can be contacted through it. Consequently, the interconnection of mailbox systems is crucial to the development of the medium and must, in turn, rely on the development and adoption of standards.

At the international level, bodies such as ECMA, CCITT and ISO are working on such standards and the UK is supporting these efforts.

Within the UK itself, a consortium led by DoTI is working on intercept standards with the internation of anticipating the international work and recommending standards which will stimulate the interconnection of mailbox and other message systems in the short terms.

systems in the short term:

Recommendation: Consideration should be given to the funding of demonstrator projects which use the messaging intercept

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During his visit to the UK last week Jon Barwise spoke to Philip Hunter about his research into natural language

Professor who brings the language of logic to life

his research.

After giving a talk at Imperial College, he tactfully sidestepped a suggestion that he had qualms about the logical basis of Prolog, a language now being used for development of artificial intelligence software. And it would have been rude for Barwise to have been more forthright about Prolog.

follow to build practical applicactions.

Fundamental to Barwise's work is the belief that first-order logic is not enough to describe real life situations. First order logic is the use of simple logical connections like and, or, not, implies, all of which are wellknown to computer applications.

What we need is something that accounts for the whole picture," says Barwise.

The problem with first order logic, Barwise argues, is that it afternors to isolate a sentence withmore forthright about Prolog, since his host was Bob Kowalski,

one of Prolog's pioneers.

To set the scene, Prolog is a so-called logic language ideal for des-cribing relationships between data and or events, and thought by many to be ideal as a root language for artificial intelligence applica-tions. Japan has singled the language out as a base for its fifth generation computer software.

Barwise is not at present directly concerned with Prolog or any other computer language, but is working on something much more fundamental: an attempt to de-velop a general theory of information and meaning, covering both natural and computer languages.
The results could have great significance for future computer lan-guages, machine translation of natural languages, computer speech recognition, and expert

Although still at an early stage, the importance of Barwise's work is well recognised in the US, and

The problem with first order logic is that it attempts to isolate a sentence without taking account of who spoke it and where it was spoken

According to the theory of first order logic, anything that cannot be defined using these is outside the domain of logic altogether.

First order logic is based on the mathematical theory of sets, which consist of objects classified by some simple relationship — sex differentiation for example. The language Prolog is built up around this idea, and is often called a first

order logic, it is not unreasonable to assume that he might turn up his nose at Prolog. But not in front of Kowalski.

Meaning and information are closely related and cannot be considered as separate entities."

PROFESSOR Jon Barwise of Stanford University, who has been given a \$21 million grant to develop a fundamental theory of natural and computer language, was in the UK last week to discuss his research.

Barwise has qualms about the present application of logic to understanding how information and meaning are conveyed in natural language, and by implication he criticises present computer applications in speech recognition.

attempts to isolate a sentence without taking account of who spoke it and where it was spoken.

Sentences have to be related to the real world, before the full

meaning can be extracted.

Some linguists distinguish between the meaning of individual sentences in isolation, and the information that can be inferred when the sentence is related to external factors such as whether the speaker of it is an inveterate

But Barwise thinks meaning and information are closely related and cannot be considered as separate entities. Instead he refines meaning into two types: a uni-versal meaning, and a meaning

For example the statement; "It is two o'clock" has a universal meaning. It can either be two in the morning, or two in the afternoon. But if it is dark at the is well recognised in the US, and last November he was given the steam, and co-ordinate US research on understanding the basis of the aning and information as



further, could be important for computer understanding of natural language. There would be two stages to the analysis: building up a picture of the universal mention. a picture of the universal meaning of the words, then relating this to existing knowledge of the situation to infer what was actually meant on this occasion.

Computers are light years away from being able to do this for general written or spoken language, but there is no reason why they cannot do this in situations where the possibilities are limited, by a set of rules for example.

One example, taken from Barwise's paper The Situation in Logic, is the card game bridge. The game is for four players, in competing teams of two, and involves rounds of bidding to exchange information about cards in each hand.

One of the rules of the game is that each pair must tell its opponents the meaning of any unnatural bids. One such bid is "five meaning of any unnatural bids." clubs", which some people call when they have either four aces, or no aces, in their hand.

The partner of the person making this bid will usually be able to deduce the meaning of the bid from the cards held in his/her own hand, so the bid then has a meaning specific to the situation, according to Regular's convention. according to Barwise's convention.

However the rules of the game only require the more general meaning to be explained to the

opponents.

Such reasoning is by no means beyond the wit of computers, because the language involved, and the number of possibilities are limited. It is also assisted define the limited. It is also easy to define the relations hip between the utterances, or language used, and the situation, which is the card game of bridge.

Before computers

Before computers can understand human speech, they must not only be able to extract meaning from sequences of individual words, but be able to identify the words themselves from the sound.
The same Barwisean principles

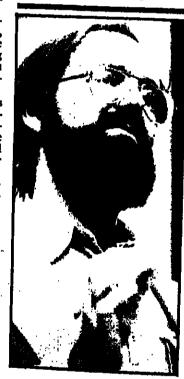
The same Barwisean principles could be applied to this process. Human speech, whether in Latin or Chinese, can be broken down into individual components, known to linguists as phonemes, which are independent of individual words. The problem for computers is that while each word can be regarded as being made up of several phonemes, in speech words run into each other, and therefore the phonemes can be ing it hard to inderstand what is being said without additional knowledge of the situation.

At present, computer speech recognition systems work by matching spoken words with stored versions of the words. Mish stored are common, except where the vecabulary is limited to less that stored what is important to individual to the words. Mish stored are common, except where the vecabulary is limited to less that stored wantonal, linguistic or cultural, respective to a single speaker. When the stored versions of stinations relations to a single speaker.

sions of the words are obtained by tuned." People in conversals recording the person who is to use aware of these relations sain the system.

trying to identify the words simply by pattern matching is a mistake because it is based just on first order logic, and ignores knowledge about the way words are combined

Individual words, like sen-tences, sometimes need to be re-lated to the surrounding context for ambiguity to be resolved. Returning to the problem of understanding the meaning of sen-



Trying to identify the words simply by pattern matching is a mistake because it is based just on first order logic

them to infer the meaning of the is said, even when the words do selves leave some ambiguity.

The utterance: "This fool

hot" does not always refer at temperature, and if the speaker referring to an Indian which curry, it probably means the has a lot of chilli in it is relationship here is between the two meanings of the word "he and the food being eaten.

Barwise explains: "Systems constraints between types of size to contain information about He aims to develop a "mum

theory", which he describe as enrichment of mathmatel's theory. Already he has the axiom of this theory, which is livery real situation S detunent set of facts f(S). If f(S1) = f(S2) then S1 = S2.

More axioms will follow to a able the relationship between the ferent situations to be related to the facts about them. It will the remain to apply the theory to us derstanding of natural language. This could also be applied to the

compilation and interpretation of high level computer languages, it applications generators. Barvist plans to address the problem of inference, the process of extracing meaning from language.

This could be important for future development of experiments. systems. In the case of an expa systems. In the case of an expansystem, inference is the process making logical deductions about particular case from an established base of knowledge in some expansional field. The expert field might be medicine, the particular case is asymptoms of pneumonia, and desymptoms of pneumonia, and it knowledge base would be

relationships between symptom Maybe not all the sympton present in the particular case, be constraints between the 180 d symptoms pertaining to tich disease will often enable a disease

Barwise plans to study the more general relations between constraints that enable inference to be made in language, He writes "A genuine explication of the commonsense notion of logic man examine these constraints in context of all the other constr context of all the other consumutation and to serve as links in formation from their environment and to serve as links in formational chains, transmitted information from one to another.

information from one to show in a general true in the state of the control of the linguists, mathematicians an

PROJECT MANAGEMENT

In these articles, the bases of successful projects are examined

Build foundations

linked with the design process and get a salary increase and/or get promoted. The chances of ob-taining either of these is enhanced may change as the project de-velops. These changes usually occur during the earlier phases of if his project is successfully

the project, particularly during the feasibility study phase.

In the feasibility study phase, In order to do this, the project many design alternatives may what is happening on the project. Before he can exercise any control, however, he must have monitored the progress of the project against a plan. In other words, the plan is the yardstick against which progress can be measured, so enabling the manager to take any corrective or controlling action

that is necessary.

Developing the plan therefore forms one of the most basic and important parts of the project manager's role. To use a building metaphor, it is the foundation

Of course, once the basic design has been decided, any change of plan is viewed with a healthy degree of suspicion as the easiest way metaphor, it is the foundation upon which the success of the pro-

pon which the success of the project is built.

Having seen the importance of the plan to the success of the project is built.

In order to build up a plan, one does, of course, need estimates of the resources likely to be required.

factors can also be critical - for example computing power avail-able for development or implementation resources.

In the very early stages of a pro-ject - say, during the initial feasi-bility study - estimates are usually based on experience. Cynics may say that this is a polite way of say-ing the estimate is merely a guess based on gut feel.

However, so long as the experience on which it is based is relevant, this approach may be the only one that is practicable.

As knowledge of the project in-

creases, so more detailed estimate will be developed. An importan reason for estimating is to be able to monitor progress later, so the basis for estimating should be straightforward enough to allow this to be readily done. This means that the estimate must be based on some easily seen measure of progress - for example the number

plan can be produced. This plan, evels and cash flow. There is a great temptation to

accept the first plan that comes to light: this is a mistake. Remember, the plan is the foundation of the project and, within reason, time spent on this is rarely wasted. As the project progresses, know-

ledge of the project increases and events occur (or do not occur when they should) which make it necessary to change the plan. Such changes should be questioned.

In this context, a useful safeguard is to keep a copy of the first plan readily available. When com-pared with the updated plan, this highlights creeping slippage.

highlights creeping slippage.
A good project plan, realistically updated in the light of project experience and outside events, is the only yardstick a project manager can use to monitor progress. It is also the basis on which he will



Why best is the enemy of good

point was that in a complex system, striving for the best design can take a very long time indeed if the best design can ever be de-fined at all. In his view, it is better to take a design which is good and get on with the job of implement-ing it, rather than waste time chasing the clusive "best" design.

At first sight, "the best is the enemy of the good", can be seen as an excuse to stop trying and an answer to the lazy man's prayer. This is most definitely not the

. The accent is very much on the word "good". It is up to the pro-ject manager to ensure that his

This approach provides a golden opportunity for free lunches

project is professionally completed on schedule. This implies both a timely and a good systems design.

While this phrase was originally applied to systems design, it also applies to a much wider field. For example, equipment selection is an area with scope for lengthy investigations of suppliers' wares in an gations of suppliers' wares in an effort to choose the best. By choosing a large enough suppliers the amount of memory a system ing a large enough number of suppliers to investigate, and

This approach also provides the evaluator with a golden opportunity for regular free lunches at must be planned and monitored. various prospective suppliers' ex-pense. The worldly project manpense. The worldly project manager soon spots this strategy in his subordinate or boss. He then ensures that he has one or two good lunches himself and ruins the social scene by forcing a decision and getting on with the project.

The great majority of computing people are far more professional than this, Indeed the project manager's very professionalism can cause an over-zealous search for perfection, whether it is in system design or equipment selection. He

design or equipment selection. He needs to exercise leadership and channel this enthusiasm away from investigation for its own sake and into getting the project completed.

It has to be remembered that

1 FIRST came across the phrase, "the best is the enemy of the good", in a book on the design of real time systems. The author's costs money indirectly in terms of delayed benefits or delayed savings from the completed project.

Sometimes the temptation investigate for longer than is necessary is because this is easier and more pleasant than making decisions. Suppliers often think they discern this trait among their

They also cynically note that lengthy investigation is invariably followed by the expectation that delivery and implementation will carried out in record time so pass by. In practice this expecta-tion is rarely achieved.

tion is rarely achieved.

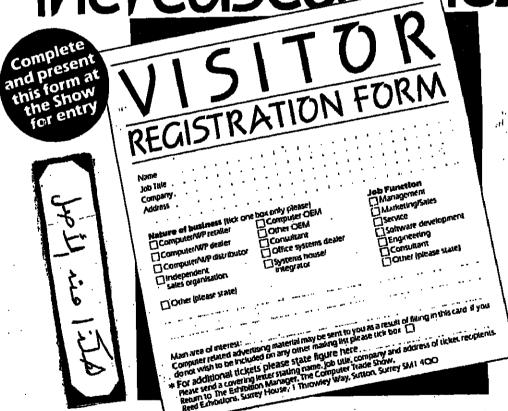
The important point in optimising design or selection is to keep in mind the relative costs and benefits of what is being done. For example, a procedure that is only used once a week is unlikely to need to be optimised as carefully as one that is used many times a day. The well-known 80/20 rule

usually applies. This says that 80% of the benefits are obtained for 20% of the effort; while the remaining 20% of the benefits require the remaining 80% of the

takes. This may have been very important 10 years ago when memory was relatively expensive. bearing in mind the rate at which new products are developed in the computer industry, it is possible an emphasis on response times, evaluate and never to make a deci-rather than minimising memory

must be planned and monitored Because of the research aspect o much of this, it is very easy for this phase to grow and get out of hand. It is one of the most difficult tasks of the project manager to provide balanced control, so that this work is not skimped but is done well and within the time allowed.

In the phrase, "the best is the enemy of the good", the implication is that the search is for the technical best. I hope I have conveyed the impression that the project manager needs to have a broader view than this. For him the best system is not only technically good, but is also produced on time and within the cost allowed. a relative A Pragmatist "Just the ticket for, increased sales"



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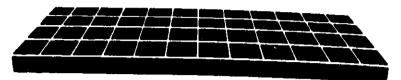
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- 8.30 COFFEE AND REGISTRATION
- Mass Retailing of Business Micros Michael Milman, managing director, Greens Business Systems (a subsidiary of Debenhams Ltd.)
- 9.55 How dealers should present themselves Chuck Hansen, managing director, Computerland.
- 10.35 COFFEE
- 10.55 What Apple expects from their dealers; what Apple gives their dealers in return — Keith Hall, sales and marketing director, Apple Computers (UK).
- 11.55 Retailing through education and training G. Summers. managing director, Planning Consultancy Ltd.
- 12.25 LUNCH

MARKETING TO THE PROFESSIONAL AND CORPORATE MARKET

- Choosing Your Products Jack Schofield, editor, Practical Computing.
- Market products and sales channels key considerations in the building of the dealer programme - John Crawford, vice president, world wide dealer programmes. Data General Corporation.
- 3.20 Personal computer dealer marketing in 1984 - Nigel Henzell-Thomas, personal computer dealer manager, IBM Ltd.
- 3.45 DEC's approach to the marketplace Mike Harding, marketing specialist, Digital Equipment.
- How to approach the corporate customer Hal Hovland, Joint managing director, Hoyland Business Systems,
- 4.50 CLOSE

WEDNESDAY, MARCH 14TH SOFTWARE

- 8.30 COFFEE AND REGISTRATION
- 9.15 Vertical market software coverage of vertical markets by specific packages varies greatly some sectors are over-supplied and there are many open opportunities — Russ Nathan, managing director, Romtec.
- 9.55 Procurement How you evaluate software from various sources — David Turley, director information systems division, Tamsys.
- 10.05 COFFEE
- 10.55 Marketing Software The Business Market - Barry Neil, sales manager, Micro Computer Products International Ltd.
 - The Games Market Nick Alexander, managing director, Virgin Games.
- 11.35 Systems and applications software developments - David Fraser, general manager, Microsoft Ltd.
- 12.15 LUNCH Guest speaker John McNulty, McNulty's Interchange.

SYSTEMS INTEGRATORS AND OEMs

- 2.00 Communication is the key to office automation - Malcolm Reip, OEM marketing manager, Computer and Systems Engineering PLC.
- Discs and Peripherals Bob Britten, sales and operations manager. Kennedy International Inc.
- Printer products and the markets Alan Clemmetsen, consultant, Mannesmann Tally
- Market trends in VDUs and VDU terminals Harvey Ulijohn, managing director, Lear Siegler Data Products Ltd.
- 4.40 CLOSE.

REGISTRATION FORM

Please indicate which day(s) you will be attending

13 March.... 14 March

The fee of £185 plus £27.75 VAT for two days or £95 plus £14.25 VAT for one day covers attendance, coffee, lunch, conference documentation and exhibition admission: Tax invoice will be sent. Cheques to be made payable to

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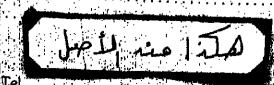
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MANY organisations that suffer total loss of their data processing functions cease trading as a direct

result. Nevertheless, computer networks, especially in industries, where there is a high volume o transactions, are an integral part of the business. Airlines, banks, insurance companies and building societies would find it almost im-

RISK MANAGEMENT

creases, medium-size and even small firms are finding that their business is becoming bound up with intechnology. High levels of investment in computer equip-ment have meant increasing dependence - to the point where ystem failure can have disastrous

In order to minimise the poten-tial dangers, many businesses have adopted a "risk management" ap-proach. Far from being a merely intellectual exercise, this tech-nique has directly saved many

t is a method of approaching the problem of how to deal with threats such as fire or flood, which can endanger a computer-based system. The objectives are to

> By appointing a fire team" small blazes can be controlled internally, but these should not be used as a substitute for the real fire brigade

protect the system from loss; to minimise the cost of counter-measures implemented in the security programme; and to minimise counters and to minimise counters and to minimise counters. Another potential threat is delilise any losses that do occur. The overall strategy of risk man-

mented in case of disaster. while contingency plans allow for

sufficient insurance cover to re-place lost assets and an alternative data processing capability until replacement equipment can be installed.

Everybody and everything entering the building should be checked, and visitors asked to use The commonest threat is fire, which can have three sources. Pire can start outside the building, inside the building, or within the computer room itself.

Obvious external risks, such as proximity to charmists.

Firms can be ruined by disasters, such as fire or floods. David Cross looks at how to manage the threats and survive maintained to avoid electrical short disaster, these copies can be used

Fires may also start where forms are kept in data-encoding or pro-gramming areas, which should be carefully supervised. Smoke, heat and corrosive gases

may enter through doors, windows, elevator shafts or air conditioning ducts. Tapes and disc packs may be seriously damaged in temperatures as low as 150 degrees Fahrenheit.

The first consideration to avoid these potential dangers must be the building in which the compu-ter is housed. It should obviously conform to current fire safety standards and be separated from hazardous materials and opera-

Fire detectors should be used within the computer room to pro-vide prompt, positive warning. The newest systems use detectors that are able to report the materials which are causing the fire. In adjacent areas, rate-of-temperature-rise detectors should be used, and f possible, these should be

installed throughout the building.
The control panel, which monitors those devices, should include enough indicators to make it easy to pinpoint the location of a fire. Ideally, the system should also be connected to the local fire station

to ensure a rapid response.

By appointing a "fire team" small blazes can be controlled internally, but these should not be used as a substitute for the real fire brigade! At no time should they
put their own lives at risk. Ample
portable fire extinguishers should
be provided and preferably an

Precautions must also be taken with regard to water. This can

agement falls broadly into two areas. Firstly there is physical security; and secondly there are the contingency plans to be implemented in a continuous and the continuous and the continuous areas. To counter this type of Extremists, vandals, extortionists, damage. To counter this type o Physical security can guard threat, the building, in terms or spaints natural and human threats, position, construction and position, controlling access, methods of controlling access, must be considered carefully.

> badges. Security guards or surveileffective ways of watching your premises, although the equipment only works if it is properly manned

proximity to chemicals, petroleum, warehousing, timber yards
or any other possible causes of fire,
should be avoided if possible. Inside the building, waste bins
should be emptied when full, wiring should be regarded and an ear kept to the ground for any
signs of unrest. signs of unrest.
In addition to these precautions

ing should be regularly checked and maintained and smoking should be positively discouraged.

Inside the computer room, all the equipment should be carefully premises. Then, in the event of a

on an alternative computer.

business go up in flames

Don't let the future of your

computer equipment. Being prudent, it appoints a risk manager trains its staff to be fully aware of potential threats; and takes every conceivable precaution to guard its

insurance for the present monetary

value of the equipment, so that is can be replaced if lost.

with Murphy's Law: if something

table of threats, the organisation

must have adequate contingency

plans. These plans should provide

To counter this most unpredic-

The second, and even more vital, part of the contingency plans done all of this, it still has to deal

is to have immediate access to an alternative data processing capabil-ity. This is usually referred to as a

offering such a service for Digital Equipment users, is Allen Compu-ter International (ACI). It is a London-based DEC OEM, which offers bureau, personal computer

DISASTERS

can be recommenced rapidly with a minimum of disruption when someone's site ceases to function PDP-11 computers has two levels of service. The first level allows a

company to use a suitable configu ration on a timesharing basis. Stat can either continue to work from their own offices by using the data centre's communications network, or they can use ACI's premises in The second option provides

At ACI's data centre, operations

suitable computer configuration to run the software that is required Emergency utilisation of this resource is available on a "sole users" basis. Once again, staff may use the facilities at the London data centre, or gain access to the system via remote communica-

The emergency recovery service is available to subscribers 24 hours a day, seven days a week. Experienced operations staff are always on site, ready to provide assistance on an "escalation" basis, de-pending on the severity of the problem which has occurred.

The details of a company's current configuration are checked

Everybody and everything entering the building should be checked, and visitors asked to use badges . . Personnel should be

when it joins the service, as well as the applications software and current operating system. This is to ensure full compatibilty and to eli-minate any difficulties should a disaster occur.

constantly screened

As part of the service regular dry-runs are undertaken where discs and tapes from the user site are run at ACI's bureau.

most importance to a service like this, and ACI only allows fully authorised personnel into the computer section of the data centre. Even to gain access to the reception area requires the use of a

controlled entry system.

As businesses, public utilities, government departments, charities, hospitals and services increasingly rely on computers, safeguards must be put into operation. To ignore this requirement is not merely to risk the cost of the equipment, but to put in peril the continued existence of the organisation itself.

The sufest course of action involves the appointment of a risk manager; sufficient insurance to cover the replacement value of your computer equipment; and guaranteed access to a disaster re-

covery facility.
David Cross is a freelance journalist.

Setting standards for som Whacking the sacred sophisticated characters cows of logic for six

one, somewhere, whose needs can-not be taken into account explicitly. But if the needs are recognised, then they may be catered for implicitly. This is what has happened in the area of character sels and coding. Consider ISO 6937 Coded Char-

acter Sets for Text Communication (Computer Weekly, February 23). This standard, soon to be published, has provision for 41 languages based on the Latin alphaber, accommodating 13 distinguishing marks or accents to achieve this. Additionally, there are other special graphical symbols; for example £, \$ and c are all allocated different codes, and there are section and paragraph marks as well as copyright and registered signs.

In the context of an 8-bit code, the basic or primary graphic character set (the international reference version of ISO 636) is designated the G0 set and occupies the left-hand side of the code table, the newly-defined characters, the supplementary set, being the GI set in the right hand side.

These two graphic character sets, G0 and G1, have their counterparts in two control sets, CO and CI, the primary set being CO with the C1 set containing elementary control functions of the supplementary set for page-image

The control functions of ISO 6937 are a subset of those of ISO 6429 Additional Control Functions

But there may well be requirements for the full set defined in ISO 6429 for typesetting. Other users may work in languages based on other alphabets, ideograms for example; and bibliographers, say, or those involved in specialised publishing, have other needs.

ublishing, have other needs.
To satisfy some, completely different character sets are required while for others, parts of the existing ones are needed in conjunction with special graphic characters, yet more being satisfied with different control characters.

The needs are various, but all can be satisfield in a standard way, for there is provision within ISO 6937 to escape in a predetermined manner into other character sets which have been registered with ISO, and there are related standards. The means are described in ISO 2022 Information Processing

ISO 7-bit and 8-bit Coded

Character Sets — Code Extension

The Code Character Sets — Code Character Sets — Code Extension

Character Sets — Code Extension

Character Sets — Code Extension Techniques (second edition 1982).
First published in 1973 to deal with the 7-bit environment, the updated version takes account of

It is now possible to invoke four additional sets of 94 graphic char-, co to G3, thus 376 graphic characters may be designated

The G0 set is always invoked into the left-hand side of an 8-bit code table, G1 to G3 being invoked into either the left or right-hand sides by means of locking shifts, to replace the code table that was previously in that position. Thus the Arabic alphabet may be used in conjunction with the Latin alphabet. Single shifts permit any single character from the G2 or G3 set to be invoked.

Multiple-byte sets, necessary for Chinese for example, are also

Provision exists too for invoking two sets of 32 control characters, C0 and C1, and additional single

A soon-to-be-published standard provides for 41 languages based on the Latin alphabet Joan M. Smith describes what's involved

الله الله المه المنظمة المنظم

Cyrillic

абвгдежзийклмнопрстуфхцчшщъыьэюя ё АБВГДЕЖЗИЙКЛМНОПРСТУФХЦЧШЩЪЫЬЭЮЯ Ё 1234567890 ?! (.,;;) »« "

αβγδεζηθικλμνξοπρσςτυφχψω!(.,;:)»« ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΎΦΧΨΩ 1234567890

Hebrew

אבינענונות הבאנות אבינות אבינות האונות הונות האונות התונות האונות התונות התונות התונות התונות התונות התונות התונות 1234567890?!(.,;:) for Character-Imaging Devices, a standard which was published Standards for Cyrillic, Arabic, Hebrew and Greek characters are all currently being revised.

standard way, and there is another facility, within ISO 2022, to specify dynamically redefinable character sets at the time of use,

including multiple-byte sets.

All this may be done in a 7-bit or an 8-bit environment, and there may be interworking between 7-bit and 8-bit systems. Specific meanings of individual

escape sequences are registered using the procedures described in ISO 2375 Data Processing — Procedure for Registration of Escape Sequences. It is more than the title suggests since it is not only the sequence itself which is registered but also the character set associated with it.

sociated with it.

The publication of the register informs everyone concerned of character sets already developed, thus promoting compatibility in international interchange and avoiding duplication of effort in developing application-oriented sets.

The registration authority is the European Computer Manufactur-ets' Association (ECMA) from which a layout form is obtainable to apply for registration of a new set. Applications for registration may be made through a member body of ISO, for example the British Standards Institution.

If the proposed set has its ISO 5428: Greek Alphaber support it is then forwarded to a Coded Character Set for Bibliosmall group of coding experts within ISO sub-committee 2 of

technical committee 97, which deals with character sets and coding for information processing, it is put out to vote, and after any comments have been taken into account by negotiation between the experts' group and the proposer, and if a majority has voted in favour, it is added to the

Several sets are currently being considered for inclusion, and a list of those actually registered is shown in Table 1.

CO and CI, and additional single control functions.

There is a facility to register character sets and single control functions, and thus use them in a shown in I able 1.

From this it can be seen that Use.

Since most of us need at some Chinese, Japanese, Arabic and time to peruse a library file if not Application-oriented sets are consider some of the features in

diverse and include those used by the newspaper industry in Scandi-navia, and librarians in the atomic energy authority.

Some have associated control character sets; other sets are for control characters independent of special graphic sets.

Examination of the list gives a good flavour of what is possible, but there are surely many applications for which ad hoc sets have been developed and are in use which have not been registered.

There is little doubt that this ISO scheme is not used sufficiently. It could and should be

ciently. It could and should be very powerful as all the mechanisms exist and they have been proved; however, it has suffered from lack of publicity among potential users, and maybe this are potential users, and maybe this ar-ticle is going part way to providing a remedy.

Some of these sets are the subject of other standards, draft standards, and draft proposals, some of which are not registered as character sets. Several relate specifically to bibliographic char-

acter sets: ISO 5426; Extension of the Latin Alphabet Coded Character Set for Bibliographic Information Interchange (1980), registered set

Coded Character Set for Bibliographic Information Interchange (1980), registered set No. 55

ISO/DIS 5427: Extended Cyrillic Alphabet Character Set for Bibliographic Use, registered set No. 54

ISO 6438: African Character Set; registered set No. 39
ISO/DP 6630; Bibliographic Control Characters, registered set

E. ISO/DP 6861 Cyrillic Alphaber Character Sets for Slavonic Languages ISO/DP 6862 Mathematical

cluded in the above. ISO 5426 (registered set No. 53) consists of 76 graphic characters and is based on the international reference ver-sion of ISO 646. Additionally it sion of 18O 646. Additionally it has special signs (eg sound recording copyright sign, trade mark sign, double dagger), special letters (eg slash d), and many nonspacing discritics (eg mjagkij znak, used in transliterated Cyrillic alphabet languages; horn yeed in

letnamese and transliterated

646
The set of graphic characters of the UK 7-bit data code
ASCII graphic character set
The NATS main graphic set of characters for newspaper text
transmission in Finland and Sweden
The NATS additional graphic set of characters for newspaper text
transmission in Finland and Sweden
The NATS additional graphic set of characters for newspaper text
transmission in Finland and Sweden
The NATS main graphic set of

The Swedish basic graphic set of characters
The Swedish graphic set of characters
of cofficial writing of sames
The Japanese KATAKANA graphic set of characters
The Japanese KATAKANA graphic set of characters
The Japanese Roman graphic set of characters
Variant of the ISO 7-bit coded character set (graphics only) for the Isalian language
Graphic character set for the Purtugutes language
Variant of the ISO 7-bit coded character set (graphics only) for the Spanish language
Greek graphic set.
Latin-Greek combined graphic set
(capital letters only)
German reference version of the ISO
7-bit coded character set (graphics only) for the German standard DIN
66003

Thai; circle below, used in transliterated Bengali, Hindi, etc; right half of double tilde — used in Tagalog). It thus meets the bibliographic requirements not only of a large number of Latin-based lan-

guages but also of transliterated or Romanised forms of many others. The extended Cyrillic alphabet

set, ISO/DIS 5427 (registered set No. 54), provides letters to supplement the normal Cyrillic alphabet making it suitable for bibliographic work in Belorussian, Bulgarian, Macedonian, Russian, Serbo-Croatian, and Ukranian; while ISO/DP 6861 provides the necessary characters for bibliographic work in Glagolitic, Old Slavonic, Old Cyrillic (for Old Uk-

ended in design to penn to future inclusion of other future as more character imaging dec come on the market. Devices considered inches those for alphanument dera-printing, and microfilm out There are format effection is

ing a closer look at ISO 612. for Additional Control Fax. for Character Imaging Drie for use in an extended 74. 8-bit code. Structured in acrance with ISO 2022, it may used with ISO 6937. It is one ended in design to the structure of the structure of the structure of the structure.

text composition devices (8 to space specification); editor for tions for altering the visual dro (eg erase in field) and though moving the active position is scroll up); functions for and nition, mode setting, and mixt. neous control functions. It concept of modes caten in broad range of devices dan with the way data is receiprocessed, or imaged. Red to standard to see for yourself.

But then you should read to standard which affects you wa or is likely to do so as it may al have other facets that make it ticularly pertinent. It would be been impossible to have describe all of them in this article; at best gives only an indication of what available. In many cases some the problems with which uses a they used equipment which

conformed to standards.

Awareness of these standards the first step; the second is a specify conformance with the when procuring equipment The who do so with government fast will have their backing as a mak of the recent signing of between the UK government and the British Standards Institution.
This can only lead to more

Copies of ISO standards are obtained from the British Standards Institution, is ford Wood, Milton Keynes MKH 612-for details of registered character sets spit the European Computer Manafacture Association, Rue du Rhôte 114, CH-186 Geneva, Switzerland; finally, an information service on standards in computing having to the the Istional Computing Landards and Manchester MI 780 (the phone 061-228 6333).

Joan M. Smith is senior consultation Standards Dissipation Maximal Con-

REGISTERED CHARACTER SETS AND SINGLE CONTROL FUNCTIONS GRAPHIC CHARACTER SETS

Inguages
Japanese graphic character set for
information interchange
Alphanumerics for viewdata and
broadcast teletest
180 646 subset for INIS
(International Atomic Buergy
Agency)
INIS non-standard extension
INIS Cyrillic extension
Extension of the Latin alphabet coded
character set for bibliographic
interchange

can acter set for bibliographic interchange Ratenalou of the coded character set of the Cyrilic alphabet for bibliographic use Greek alphabet coded character set for bibliographic information interchange (TRV of ISO 546 with yet currency alga) Coded Chinese graphic character set for information interchange (TRV of ISO 646 with yet currency alga) Coded Chinese graphic character set for information interchange The graphic character set for Arabic CODAR-IV

Norwegian standard NS 4551 -

Ownering standard version 2
APL character set for workspace

69. French graphic character set for the

25 Prench set of graphic characters for the French language
27 Latin-Greek mixed graphic set (Greek capital lettars only)
31 Greek alphabet character set for bibliographic use

Prench language
70 Supplementary set of graphic characters for Videotex
71 Second supplementary set of pass Greek appaset character set for bibliographic use Basic Cyrillic graphic character set Basended character set of bibliographic data written in Latin script as defined in German standard DIN 31624 Coded character set for African languages.

CONTROL CHARACTER SETS NATS control set for newspetransmission (Scandiniavia)

transmission (Scandinavan)
countries)
Control set for newspaper int
transmission (International Press
Telecommunications Council)
The set of control characters of 180
646, with 184 replaced by single shift
for (22 (SS2)
Additional control functions for
bibliographic use scrooting to

40 Additional control functions for bibliographic use according to German standard DIN 31666
48 INIS (International Atomic Registrational Atomic Registrational Atomic Registrational Atomic Registrational Atomic Registrational Control set for UK Videote Additional control functions for bibliographic use according to International Spanderd ISO 6830
73 Attribute control set for Videote 74 The CO set of control characters of Ispanese standard IISC 6275-197
77 Cd control character set of ISO 643

SINGLE CONTROL FUNCTIONS
32 Disable menual Input (DMI)
33 Interrupe (INT)
35 Reset to initial state (RIS)
36 Locking shift two (LS2)
3 Locking shift three (LS3)
4 Locking shift three right (LS2R)
5 Locking shift three right (LS2R)
6 Locking shift one right (LS2R)
6 Locking shift one right (LS2R)

Situations and Attitudes. Jon Barwise and John Perry. Published in US, December 1983, by Massachusetts Institute of Techno-

"Here the argument is constructive. If the semantics we construct is coherent, then the arguments which would show it to be impossible must be wrong", J. Barwise and J. Perry, course notes, Stanford University,

BARWISE and Perry have created the subject of situation semantics, which represents an exciting new nent in a very old subject: logic. Many sacred cows, ancient and modern, receive a severe whacking, driving them from the pastures they have dominated.

Boolean operators '-' (bar), and '-' (conditional) are given short The representation of predicates as sets of ordered n-tuples much beloved by first-order logic addicts

and various artificial intelligence ayatollahs is discarded.

The idea that deductive arguments are stated in the form of sentences is shown to be simplistic. The discarding of the old view

leads to another perspective where such a sequence as All the horses in the yard are lame Blue Arrow is a horse in the yard

is seen not to be valid under many

Most of the functions in modern logic are well behaved. Consistency and completeness results are provable using these functions and placement of the notion of logical dreadful cold". These two

mathematical point of view in the setting, admitting such proofs.

However, underlying all this work is Boolean algebra and its "strong entailment" between

various classical extensions is a bias. This bias has many different leanings but can perhaps be seen most clearly in the use that is made of logical equivalence.

For example, a given expression

may always be substituted for another in Boolean algebra (given certain restrictions) if the given However, consider an example

from Barwise and Perry. If the robot sees that the box is

in the corner then the robot sees that the box is in the corner and that a pyramid is to the left of the box or that the box is in the corner and that no pyramid is to the left of the box.

This last argument is evident

nonsense since it it may be the case that the robot was completely unacquainted with pyramids. It certainly would not report, "There is no pyramid to the left of box" even if, in fact, there was no pyramid to the left of the box" mid to the left of the box. Evidently, mistakes have been

made in too heavy an application cians have been over-impressed by the apparent universal validity of gical equivalences.
The classical logician had only

utterances. An utterance strongly entails an unterance U2 il all the situations that support the truth of U, support the truth of U2. In the example of the robot and the pyramids the situation that supports the truth of "the robot sees that there is a box in the corner" certainly does not support the truth of "the robot sees that there

is a box in the corner and a pyrathere is a box in the corner and

A positive example where an utterance is strongly entailed by another would be where U₁ is "John kissed Mary" and U₂ is "John touched Mary". Putting this notion of strong entailment another way, if the set of situations described by U₁ is a sub-collection of the set of situations described by , then U₁ strongly entails U₂.

In addition to a complete thinking of the notion of consequence, at least as applied to ordinary language, Barwise and Perry have created new distinctions of the greatest importance for our un-derstanding of natural languages and how they contrast with the more formal languages beloved by

One such distinction is between the meaning and the interpretation

The word "1" when used by you refers to a different individual than the person referred to when I use it in such circumstances. The situation referred to by the whole statement when you use it is a different situation from the one I am referring to when I use it.

This particular phenomenon where an expression always has the same meaning but may have different interpretations is referred to as the efficiency of language.

Another aspect of this distinc-

tion between meaning and interpretation is where two itterances may have different meanings but the same interpretation. For example, "The 9.30an train to Paddington from Temple Meads, Bristol, on 18/8/1902 is leaving the station late", contrasts with "The 9.30am train to Paddington on 18/8/1902 lest the Temple Meads station, Bristol.

ferred to in both expressions is the same: the timing of the specific train in question. Where one has different meanings with the same interpretation then one has the relativity of language. Usually, however, in mathematics, sentences are used over and over again with the same meaning and the same interpretation.

something about the situation in

utterance is made although the utterance states nothing about this particular aspect of

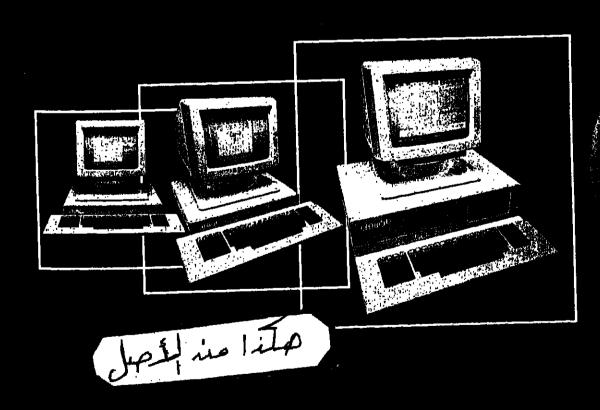
The importance of the discourse situation can be seen from a dramatic example taken from military ntelligence. During World War II strenuous efforts were made to crack the German military secret codes. Messages encoded by the use of their Enigma machines were strenuously analysed. However, after some time it was realised that simply looking at the German message logging revealed almost about as much about the German's intentions as reading decoded actual

Although this example is not strictly one of the use of the

inverse interpretation function em-ployed by Barwise and Perry, it nevertheless shows the extreme importance for a realistic analysis communication events of the discourse situation.

In addition to meaning terpretation, we have, as the third prong in the attack on classical totions, the notion of evaluation. That is to say, given an interpretation an evaluation then has to be carried out. That is to say we must try and determine whether a given erance is true or false. We may fail in this attempt

Mervyn O. Pragnell



communicating personal computer Today the TORCH is widely used by large and small businesses, local government authorities, the Armed Forces and central government departments

Phillips the most sophish ab dans MAILSystems available - and a

In addition every TORCH now has

TORCHNEL a unique and advanced local area restwork incorportating LCONET* technology TOPCHNLL is an integrated. part of each TORCH - which shares resorts examing users giving SHARED. access to disciprinters and communications TELECONFERENCING file exchange and broadcast and individual messages.

processor to Bert 2 s. 1086151 (perm). the use of UNAX* fland CP M* software. independently or encurrently Considera

tion the vast library of CP Misotiware AND to develop for the future with full UNIX Tacilities on the 68000 TORCH processor. 54511 M. ore which will allow you to work dreely without the constraints and costs of us numerable standards

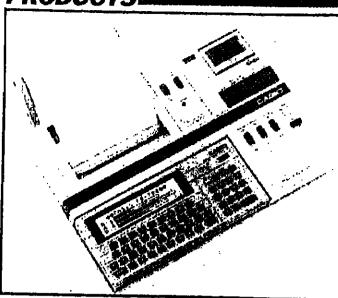
- FORCH COMPILER care committed to to other betweek and to other operating suppose nate the value of HIII RORCH.

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PRODUCTS



The Casio PB700 personal computer in FA10 cradle.

Pocket-size personal

optional CM1 microcassette deck. FA10 is supplied with a carry-case, two rolls of paper, four

colour pens, external cassette leads

and an instruction book. The complete package weighs under 5lb. Recommended retail prices are: Recommended retail prices are: PB700 (4K) £139; FA10 printer/-plotter £189; OR4 (4K RAM)

A "green screen only" feature incorporated in this colour moni-

tor eliminates all other colours

DC-coupling permits the video display to retain its colour balance from a single dot to full screen

into the personal computer market is marked by Casio's launch of model PB700.

This formalish and bases

Using four penlight torch batteries for up to 100 hours of continuous use, PB700 measures 7% x 3½ x % inches and weighs 11.1 ounces, yet it has 4K RAM, expandable to 16K RAM in 4K steps.

A qwerty layout keyboard and a 4 line x 20 character LCD display are included in this small package. The display can also show 160x32 dot graphics.

Using an extended Basic, the keyboard can be used to enter upper and lower case characters.

keyboard can be used to enter upper and lower case characters, Basic keywords, symbols, and numbers are on the separate numeric keypad.

The PB700 is supplied with an piotter £189; OR4 (4K RAM) £29.95; CM1 microcassette £65. All prices include VAT.

Caslo Electronics Co (CW), Unit Six, 1000 North Circular Road, London NW2 7JD. Tel: 01-450 9131.

Monitor offers sharp graphics

ZENITH Data Systems has

ZENITH Data Systems has launched a colour monitor, the ZVM-133, which can display an infinite array of colours and intensities with sharp graphics, according to the manufacturer.

A high resolution colour graphics monitor, it is designed for use with Zenith's own range of desktop computers, the Z100 series. It is also compatible with mostbusiness microcomputers having RGB direct drive outputs, such as the IBM Personal and Apple III.

The ZVB-133 has a 25 line by 80 characters display and pixel resolu-

This enables monochromatic material to be displayed on the black face of the screen. characters display and pixel resolu-tion of 640 dots by 480 lines (interlaced), which creates impressive graphics. It has a wide bandwidth of 20 MHz with the rise time of 70 nanoseconds to generate crisp lines, pure colours and intensely

clear copy.

Front-access user controls enable convenient operator adjustments. An LED indicator notifies

uses thermal printing techniques to give a high contrast reproduc-

The ZVM-133 monitor is priced at £395 plus VAT, and quantity discount packages are available. Zenith Data Systems (CW), Bristol Road, Gloucester, GL2 6EE. Tel: (0452) 29451. Page faxed More power in 30 secs for Pyramid

n Data Systems has version of its 6400 facsimile tended the power of its Pyramid transceiver with a V24 interface terminal system with the launch of which allows the transmission of data between external moderns on a new microprocessor unit with integral Winchester disc drive and 16-bit capability. leased lines as well as the national

celephone network.

Called the 6400 VM, the new model allows documents to be used on existing data transceiver lines. It will also operate with a suitable time division multiplexer as part of a multi-terminal rietwork sharing a single line.

Fully compatible with the Intest Group III facsimile machines, the desk-top 6400 VM can transmit a standard A4 page in 30 seconds. It uses thermal printing techniques Like all the hardware in the Pyramid range, the two versions of the new microprocessor, the Pyramid 504 (16-bit) and 505 (Winchester) are UK designed and manufactured.

A Pyramid user can start with the existing 501 processor, with

the existing 501 processor with twin floopy disc drives and, by inplace enhancements; move on to a 16-bit processor or Winchester disc, or both Such enhancement possibilities make the Pyramid a much more powerful and versatile system; says Delta

system says Delta.

The Pyramid 504 is available now and the 505 from April.

Delta Data Systems (CW), Swallowfields, Welwyn Garden City, Herts AL7 1JD, Tel: Welwyn Garden City, Garden City 33833. The 6400 VM is approved by British Telecom.
Infotee (CW), Hoechist House,
So Salisbury Road, Hounslow,
Middx TW4 61H. Tel: 01-572

Micro designed with builders in mind

BUILDING contractors are the target for a new micro system from Wilcox Computers. The Wilcox 2000 is a switchable 8- or 16-bit micro with three software packages designed for estimating, costing and sub-contracting

applications.

The company has only a 2% market share in this industry from its earlier systems, but company chairman Robert Shove says an independent survey of the market by PA Consultants indicates that the System 2000 "has a bright future ahead."

The building industry has just come through a severe recession, says director Dennis Wrigley. "As a result the margin for error in estimating is extremely small and the need for a computer system which can keep track of estimates and stocks is obvious."

The main problem with selling computers into this industry is ignorance on the part of company

those previously offered by the company in that it uses "industry standard" components, including Z80A and 8088 processors and the CP/M operating system, in place of

Internal management of the system is handled by an eight-bit 6502 CPU which also controls the 5 in screen display. Internal storage is 512 kbytes.
The software is written in CIS Co-

bol though Shove says the system will support any high level lansystem is about £5,000.

Production at the Wrexham factory is ten machines a month - all destined for clients in the building Wilcox Computers Ltd (CW) Rackery Lane, Llay, Wrexham, Clwyd LL12 0PB. Tel. (0978-83) 4866.



Portable test unit

NOW available from Bull Peri- disk drives usin pherals UK is a lightweight porta-ble test unit which has been designed to test the entire range of 10½in and 5¼in disc drives (5-120 megabytes) manufactured by Bull Peripheriques in Belfort. Featuring a ST 506 industry standard interface, the PTU can also be used to test other manufacturers

set his own test parameters by linking together a series of residen programs

Bull Peripherals UK (CN), Kingswick House, Sunning, Berkshire SL5 7BL. Tel: 699. House, Oxford Street, Newbury, Berkshire RG13 1JB.

" 卷重压 ~

PRODUCTS Speed-up for the **Apples** FIRST product from the newly-formed Digital Research hardware division is CP/M Gold Card, an add-on for the Apple II, II+ and Ile series of personal computers which is said to allow CP/M applications to run on these machines up to three times faster than with competitive cards. CP/M Gold Card is a printed

circuit board that plugs into any internal connector slot in any

CP/M Gold Card uses a six-me-

gahertz Z80 microprocessor with 64 Kbytes of on-board memory

and an optional cache memory of 128 Kbytes. In addition, optional cache memory can enhance per-formance in many applications without the user having to make

any changes in the program.

The CP/M Gold Card will sell in

two configurations: £399 for basic capabilities and £640 with the 128 Kbytes cache memory feature.

Digital Research (CW), Oxford

Anti-static protection

CLBAN Tread Service is supplying anti-static mats to protect mainframes and microcomputers against damage caused by static against damage caused by static

Charges of between 3,000 and 5,000 volts will build up merely as without any deterioration in antithe result of a person walking static properties.

across a carpeted room or when an operator moves position on a chair and may introduce errors into

which rules out the possibility o

Sales system with insurance brokers in mind

MICROCOMPUTER designed or insurance brokers is announced

broker's staff will have prompt access to all renewals and related data. In addition, staff are released from time-consuming manual routines, and are able to concentrate on prospecting, selling, and writing new business, says the manufacturer.

The system is based on the re-cently-introduced K2150 harddisc multiprocessor microcomputer, designed, manufactured, sold and supported exclusively by K2150, a software package for bro-kers has been produced by a team of specialists in Kalamazoo's R&D

department.
The software package makes entries on receipt of cash, prepares and reconciles banking, keeping running totals of the broker's ac-

counts, aids reconciliation with the insurers, and maintains a range of management statistics which in-clude control of debtors, instal-ments, and overdue accounts.

To these can be added client accounting and statement produc-tion for credit policy holders, and monthly settlement statements for larger cash clients. The system automatically produces pre-renewal lists and renewal invitations.

Operating the Kalamazoo system is simple: a conversational routine displayed on the VDU screen is used. If, for example, the operator is using the wrong insurance company for a particular type of hysices a message on the type of business, a message on the screen will indicate this.

The cost of the system is £5,275

depending on configuration; the basic software package, £1,975.

Kalamazoo (CW), Northfield, Birmingham B31 2RW. Tel: 021-475 2191, ext 560 or 435.

Cromemco personal upgrade

CROMEMCO has developed a full-size professional keyboard for the Cl0 personal computer and is to make available a range of indus-try standard software packages.

These packages include Wordstar, MailMerge, InfoStar

and CalcStar. In addition to the standard

qwerty key set, the new profes-sional keyboard features a 14-key numeric pad for fast data entry, and 20 function keys to speed frequently-used keyboard operations. No alterations are needed to use

the new keyboard.

New third-party software packages have been tailored to run on his Z80-based machine.

The C10 has extensive in built communications facilities allowing several units to be interconnected and used as distributed workstations in a networked environment, or to function as intelligent terminals (front-end processors in large

Cromemco (CW), 30 Dundas Street, Edinburgh EH3 6JN.



In a family of great performers the TeleVideo 924 is truly a startification of the power and versatility you would expect aron the world's leading independent manufacturer of video display terminals.

Ergonomically, designed to both tilt and swivel the non-glare high contrast CRT combines beauty with brains. Packed with earlies within include 16 non-volatile, programmable function says 64 special graphics characters. 32 non-embadded visual attribute contilinations, programmable delimiters, Buffered printer, both econogliable keyboard.

Not is the 924 a one-night wonder, towill go on performing with immatched eliminations are in while the visual artificial vertically mounted by social places and places is setting new standards.

Lyou visual like ty see the fleet/specip24 perform to would social people on the right.

Screen star. Supporting cast.

As a supporting cast we will not be as well known to you as the star performer on the left.

In bettering the service that you can offer your customers though, we are just as essential.

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From a printer to a touch sensitive screen and beyond. And we guarantee our concern won't stop with the delivery

Mellordata's Field Engineering Group has been on the road for ten years keeping computers computing. It all adds up to a service which has been greeted by warm

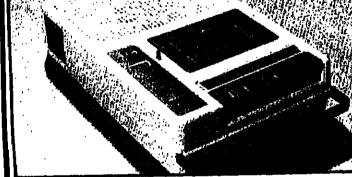
applause wherever we have performed. As with any performance though, it's always best to be your

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Audio and data recorder from Bell & Howell.

Heavy-duty recorder

A HEAVY-DUTY cassette recorder for the BBC; Acom and other personal computers has been developed jointly by Bell & Howell and Leasalink Viewdata. It is being marketed through the two companies stellers at the Bell & companies' retailers as the Bell & Howell 11/LVL 3179CX.

The recorder is based on a system designed for use in schools. The educational pedigree of the design is evident in the operating keys with their function symbols in relief so that blind users can identify them by trouch

identify them by touch.

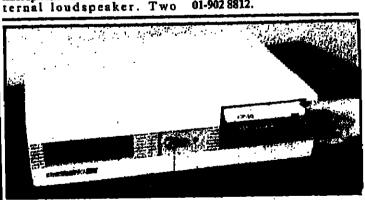
The 3179CX has an internal

headphone sockets are provided for private study as well as a socket for remote control of the drive nal switch or an optional switch on

the external microphone.

The recorder follows educa tional practice in having "cue and review modes. These allow fast forward or backward winding to be done with the "play" key depressed so that playback begins

Bell & Howell (CW), Alperton House, Bridgewater Road, Wem-bley, Middlesex HA0 1EG. Tel: 01-902 8812.



The C3005 from Country Computers.

Launching into networks

COUNTRY Computers, a Red-ditch-based manufacturer, enters technique allows users to commulaunch of the C30005.

to 15 users, all with their own Z80A processor with 64K RAM.

Unlike many other multi-user systems, data transfer is handled at full processor speed over the system's bus, improving system throughput and minimising the bottleneck found in some systems. Because all five processors have been designed on a single PCB for

the network market with the launch of the C30005. The central system server can communicate via CP/Net with up system server, permitting instant transfer of electronic mail. Optional system software has

> key ISAM with powerful print spooling features. The system is priced at under

Country Computers (CW), Pipers Road, Park Farm Industrial Estate, Redditch, Worcs. 898 OHU. Tel: (0527) 29826.

DESIGNED for both data processing and word processing applica-tions, the 2068 is the first of a series of announcements which Memorex believes will put it in the forefront of the integrated office.

The 2068 offers matrix printing at 350 characters per second and quality text at 80chps. It will attach to IBM as well as to Memorex

A major feature of the 2068 is that character, style and shape can be changed in flight giving bold headings and itolic script for added

condensed and proportional printing and a full range of paper landling options, all selectable either automatically from the CPU

panel. The 2068 is priced at £3,905. Demonstration machines are al-ready available with volume de-liveries scheduled for April.



The 2068 from Memorex.

The new printer joins Memorex' 2000 Series of 3270 compatible displays, controllers and printers.

The 2068 printer is the first of a series of major products to be announced in the next few months by

Memorex UK (CW), Memorex House, Church Street, Staines, Middlesex. Tel: Staines 51488.

Electronic publishing on the Perq

launched a text processing soft-ware package called QED which has been developed for users of Additionally graphics such as ICL's Perq raster graphics workstation. QED is used in con-junction with the LBP-10 laser

Developed by Oxford University's Program Research Group, QED produces documentation which requires more than conventional word processing can achieve, but for which full-scale ypesetting would be inappro-

priate, says Sintrom.

Examples include the production of technical manuals, sales

guides, staff handbooks, research reports and newsletters.

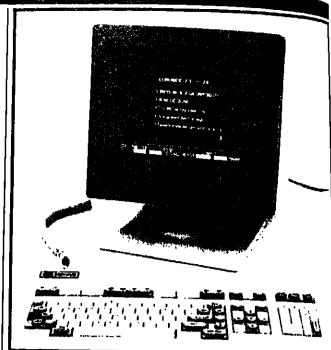
QED is fully compatible with Prolog Software's 2-D drafting system Perq DP, and meets all the common composing requirements including a variety of type fonts,

pictures, diagrams and charts can be placed alongside or included within bodies of text, and the user can see each complete page on the Perq workstation screen and make

amendments before final printing. Final copy is produced on a high Sintrom LBP-10 Laser printer.
To maintain good resolution,
QED maintains two font files for

each character set one at Perq resolution to display text on the screen, the other at 240 pixels per inch for use on the Sintrom printer. This gives better print quality than doubling up on pixels when using an increased resolution print device.

Sintrom Electronics (CW) 14 Arkwright Road, Reading, Berks, RG2 0LS. Tel: (0734) 875464.



Eurobee family grows

nounces that its second Eurobee terminal, the FT-20, is now in production at the company's factory in the Irish Republic.

in the Irish Republic.

The new terminal, designed with users of DEC equipment in mind, follows the launch earlier this year of Bechive's FT-10 and forms part of the family of three smart ergonomic VDUs produced for the European market.

The terminal configuration

without resorting to complicated switching. An Ansi-standard editing terminal is a choice of either 80 and 132 column format.

Based on the Intel 8084A-2

Based on the Intel 8084A-2

Based of the Intel 8084A-2

10MHz microprocessor, the Fi-20 is designed for more specialised OEM applications or, for the ed users, can serve as a viewport in a database environment. Typical applications for this buffered VT100 compatible terminal at message communications enquiry/retrieval, transaction pros-sing, distributed data processing

* 4 2 2 .

and process control.

Beehive's 52,000 sq. ft. factor The terminal configuration in Co. Cork and the Ascot manager feature developed by Bechive allows many functions to be initiated, direct from the keyboard trading. The US parent in Salara and the Ascot manager feature developed by Bechive a 52,000 sq. it. manager for the Ascot manager feature developed by Bechive and the Ascot manager feature developed by Bechive allows many functions to be initiated, direct from the keyboard

NEC joins dot matrix market

NEC has entered the dot-matrix printer market with the Pinwriters family, available from Thame Systems.

There are currently two models in the range. The P2 is an 80-column device, while the P3 is a full-width 136 character machine; otherwise all features are common otherwise all features are common

otherwise all features are common to both models.

The Pinwriters are multi-mode printers. There is a draft speed of 180 chps, a high density mode of 90 chps, and a near letter quality more of 30 chps. All three modes are either hardware or software switchable, as is the ability to switch font styles in the midst of printing text.

printing text.
Standard fonts are Pica, Elite and Condensed print, with the provision for downloadable fonts also being standard.

The long life print heads (200 million impressions per pin) are of 18 wire staggered configuration for maximum dot density and long life. This is borne out by MTBF figures of 4,000 hours and a thereafter average repair time of 20

Thame Systems (CW), Thame Park Road, Thame, Oxon OX9 3XD. Tel: 084 421 5471.

Micro fault locator

A MICRO system fault locator has been launched by GP Industrial Electronics. Called the MFL 373, it is designed for fast fault-finding and de-bugging prototype microbased hardware. Operation is based on simu-

ation, which allows all the lines of a system bus to be independently a system bits to be independently driven and sensed. The microprocessor of the system under test is replaced by the appropriately mached test pod of the MPL 373.

GP. Industrial Electronics (CW), Unit E, Harley Close, Newsham Industrial Estate, Plymouth. Tel: (0752) B32961. Newspans, 100 mouth. Tel: (0752) B32961.



Computers

eye, with the new Micron by:
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Micron Technology's Optical The package includes caner ens, tripod, 6ft telephone con

(camera to computer), floppy di with camera software routines, in struction manual and serial TII. interface for Apple II, IBM-PC, Radio Shack TRS-80 CC. Sinchin

Timex or Commodore 64.

Most popular baud rates are provided by the Micron Rye interface. Options include spart 1832 OpticRAM 25ft telephose cord, IS32 Bullet with 4ft interconnecting cable, zoom or macro lens and RS232 interface.

The camera has 128 x 256 ckg.

lens and RS232 interface.

The camera has 128 × 256 clament resolution capable of transmitting up to 20 frames per second. Software is delivered on a second. floppy disc with self-pron ous scan, freeze frame, frame sie or compare frame to frame.

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4RP, Tel: (0256) 57166.

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of regional sites on IBM system 34



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computers. New projects recently introduced include a manufacturing system running at one of our factories and the installation of a group financial accounting and

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THE DP ENVIRONMENT

Currently an IBM 4341 model 2 running MVS, CICS, DL/1 and COBOL, with a 3083 model E due to be installed in March. In addition, Hoechst is committed to personal computing, with 19 Apples in use under the guidance of an Information Centre.

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Four years' sound experience is required at least one of which must have been spent in a VME support role. Experience of one or more of the following would be an advantage: COBOL, PASCAL or DME. The right candidate must be able to demonstrate the ability to

ANALYSTS

Experience of VME/DME transition will be of particular interest, as will practical experience of on-line systems, database, mini and micro systems. Candidates with limited analysis experience having a solid prosystems. gramming background, will also be considered

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Our client is a leader in their sector of the Advertising industry, employing 500 people at 5 locations and with a group turnover of £18millon pa. They have recently installed a PRIME 550 and are in the process of converting existing systems from both Bureaux and an In-house IBM System 34.

These predominantly bespoke systems are written in RPG II and are being converted with the aid of ESCAPE 34. Applications include:

- Sales Order Processing Management Information
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DP Manager

They now require a DP Manager to take over the management of a department of 5 people, have budget responsibility and report directly to In particular, the DPM will need to review existing systems and, in the light of additional requirements and new facilities available on the PRIME, produce a 3 year plan. The objectives being to:

- ensure the best use of existing facilities.
- introduce potential enhancements (system generators & 4th GLL
- co-ordinate activities with external systems at associated companies.
- increase the use of microcomputers, for possible Distributed Processing.

You'll need to have at least 2-3 years good system design experience on minicomputers (ideally PRIME), an understanding of relevant commercial applications, be able to interpret user requirements and specify solutions to them. Since this is a dynamic environment which will involve you in negotiating with and supervising external software houses and programming staff, it is essential that you communicate well both orally and in writing.

Consideration will be given to relocation assistance where appropriate. To take your first step up into management, telephone **Hugo Fair on** 01-828 6846 or send your CV to: **NSH Associates, 205 Victoria Street,**

...tomorrow's Drawing Office technology —

Aarque Systems Limited are a leading supplier of equipment and materials to drawing offices and print rooms with products ranging from the most sophisticated reprographic systems to drafting materials. They are both manufacturers and distributors in the U.K. with a head office at Colnbrook, two regional depots, 13 branch of

two regional depots, 13 branch offices and 13 print shops, employing a total of 800 people.

Computer Aided Design and Drafting (CADD) has been available in the U.K. for many years but has traditionally been reliant upon large and expensive computers which has meant that the majority of design offices still reliant posterior periods and expensive. drawing offices still rely on manual methods of drafting.
With the recent dramatic growth in the sophistication of micro-computers, practical CADD systems are becoming available at a fraction of the previous cost bringing these systems within the affordable reach of even the smallest drawing office.

Aurque are forming a new division which will market a complete range of low cost misro-computer based CADD systems. Initially, Aarque CAD centres will be in London and Derby and plans are well advanced for other locations.

London & Derby

Their sales philosophy is to provide 'hands on' demonstration facilities for potential clients at local showrooms where there will be a number of different systems on display.

The Sales Support Engineer will give demonstrations and liaise closely their specific requirements. Experience of design/ ial customers regarding drawing office practices and a knowledge of micro-computers is therefore highly desirable.

Major company benefits will also complete the attractive package — including BUPA; Pension Scheme; Company Car, etc.
For more details of these exciting opportunities please contact: Jim Wallis.

office day: 01-741 8011 office night: 01-748 1987/1975/2160 home: 01-894 0182

CADsearch, London House, 271-273 King Street, London W6 91Z.

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SYSTEMS 38 ANALYST Salary negotiable circa £11,000 p.a. Prestigious Company Small, established team Attractive Thames Valley location at House, Victoria Street, Windows Chesebrough Pond's 1 td

Managers

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Varied career, balanced personality, assertive and ambitious. Probably 30 to 35, you will have that quality which engenders confidence in your seniors and wins respect from your peers.

Euro. S/W Supp. Manager

c£20K + car Experience in a customer support environment is essential for this position. Candidates must be capable of technical appraisal of reported software difficulties, prioritising their status and allocating appropriate resources. The job will require diplomacy and resilience in dealing with senior managers across several national boundaries. A European language other than English would be a major asset. Major company

O.S. Software Manager

to £16,000 Herts. A chance for a junior manager to build a new career. It is essential for candidates to have previous experience in design and development of operating system software. He/She will be responsible for a small team which will introduce UNIX to an existing product line whilst continuing to be responsible for current O.S. software revisions. Previous UNIX ideal but not essential.

Mgr. Systems Installations

Section of Management and Assessment of the

£15.5K | car Berks. Our client, a world leader in micro hased environmental control systems requires a technical manager to control further development of existing software and manage the installation of complex systems on client sites. The successful candidate will have several years experience in a mixed software/ hardware environment, project management, staff selection and will be responsible for all new software applications taken on by

Office Auto **Prod. Manager**

Hants. £18K-£20K + car This senior position will require a broad background and knowledge of the office automation market and applications. Candidates will need to be capable of developing business plans, of evaluating products and managing support staff.
We will be looking for substantial experience of W.P., text management, electronic mail and ideally, experience of the personal computing market.

Proj. Leader Project/ L.A.N.'s Herts. eam

Leaders You will already have made algorificant achievements at project level. You are well experience that it provide attack that it provide proples in an ambitious for management.

Team Leader

Beds. £12.5K to £16.5K c£15,000 The Ideal candidate for this position will combine a strong background in development methodology with skills in personal communication to work closely with marketing people in the U.K. and U.S.A. He/She will be responsible for a team of 5 to 10 people developing network system products. We would prefer to hear from people with a computer science degree and Pascal/Algol programming skills. Our client, an independent subsidiary of a large successful engineering group, has designed and developed an extremely successful product in the E.P.O.S market. In the last 18 months turnover has doubled and additional people are required at all levels. The team leader will be responsible for new developments covering planning, quality and budget. Assembler and high level language back-ground. Ti9900 and RTL2 ideal.

Diagnostic Proj. Leader

If your background includes experience as an engineer and low level programming, you may be the person to lead this vitally im-portant area for our client. With support area for our client. With support costs figuring highly during product life the importance of effective software diagnostic aids is becoming increasingly important in maximising profitability. We would like to hear from candidates who believe they are some dates who believe they can contribute in this area.

Proj. Manager **Banking**

c£16K + car Herts. Ideally candidates will have previous experience in banking applications or very closely related. They will have the tem-perament for client liaison and be technically competent in the area of transaction processing systems and communications. Our client is a highly successful U.K. subsidiary of an American company which has established itself in the rapidly growing area of Electronic Funds Transfer systems.

Support **Consultants** to £17K + car

Designers These are high level support positions working in close liaison with company's sales force. Candidates will be capable of providing assistance with technical expertise and general business advice to support the sales force and prospect base. Work will involve demonstrations, presentations and customer assistance during the pre-installation period. Specialists Consultants

Your specialist skills have developed over several years. You command respect for personal shillty and enjoy being recognised for individual contributions.

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Engineers

The His blood of the industry shadists, project leaders and consultants of the future. Degree level education. Enthicationity, and keen to prove youngless.

Micros/Minis S/W Progs.

during the pre-installation period.
Experience with sophisticated micro/mini business systems

Berks/Herts. £8K-£13K
A specialist product company which has developed PDP 11 and 280 based systems for the travel and communication sector and a se scientific instruments manufacturer which uses PDP 11's for real-time control are both seeking programmers to join development teams. We will be looking for mixed experience from the following: Z80 assembler, Macro-11, Fortran, 'C', PL/Z. CP/M, RSX-11 and UNIX.

Comms. S/W Design

Comms. in

This is a particularly attractive part of the computer industry combining, as it does, the areas of international high finance and constantly improving computers of the constant of the const

puter communications systems. Our client has a lengthy back-ground in this area using DEC

equipment and now requires additional development and support staff. Good commercial

experience in banking or finance is the major requirement.

to £18,000

Banking

London

Herts/Beds. to £14,000 Develop your career and your communications software skills communications software skills by joining a company whose existing range of comms. software is second to none. There are a number of teams working on various developments covering LAN's, X25 and 3270 compatible products. Development is on mini and micro systems in assembler and high level languages. Reloc. assistance where appropriate.

Software Lecturers

to £13K + car Bucks. We are seeking experienced professional lecturers to join an established and extremely well equipped training centre which functions as an integral part of our client's support organisation. It is essential to have T.P. applications experience with in-depth knowledge of data analysis. Data comms. and DBMS knowledge would be a welcome bonus. Excellent career prospects.

S/W Tech. Authors

Herts/Hants/Beds to £12,000 Previous experience as a technical author/writer is essential. Your background will probably include a period of some other aspect of a period of some other aspect of computing either as a programmer or engineer. You must be capable of working with software people and providing the written descriptions of their products which make them useable by their intended customers. Your skills are widely sought by many of our

Energy Control Sys. W. Country £9K-£14K

A major international company with diverse interests in many technical markets has a well established subsidiary which sup-plies computer controlled energy management systems worldwide. We would like to hear from programmers who have real-time experience preferably with assembler and a high level langue Usual equipment is PDP-11 with Intel 8085 and purpose built consoles etc. Variety and scope for

UNIX Support Specialist

to £12,500 + bonus + car allowance

Our client offers you the oppor-tunity to put your knowledge of UNIX software to special use in providing technical support to their sales force. The company is a major international computer manufacturer and offers significant long term career prospects. Your role will be to advise and assist customers with their applications to help qualify prospects and prepare technical proposals/presen-

Open letter to experienced computing staff seeking new opportunities

Our free service to you is advice and assistance in identifying the most suitable new position for the ment of your career. Our consultants have held a variety of responsible positions in the computer industry. With this experience and their knowledge of the job market they are available to help you. The advertised vacancies are only a representative sample of the many that are regularly registered with us by our clients. Write or call us anytime to discuss your ideas.

Write or telephone (02403) 28383 during office hours. We are always ready to discuss these and many other interesting positions. Evenings and weekends only: Terry Harvey – Great Missenden (02406) 4705 Brian Coates – Chesham (0494) 785722 John Barker – Chesham (0494) 783096

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- E & E -

Software Specialists/ **Programmers** £ negotiable, plus car.

Wordplex are a leading WP/Office Automation company with products ranging from Personal Computers to large distributed office systems.

We currently require Software Specialists and Programmers for active involvement in the development/enhancement of the following:

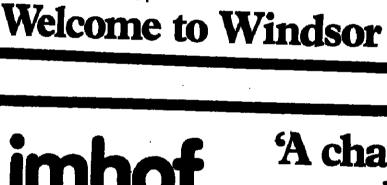
- ☐ Operating Systems
- □ Communications □ Electronic Mail
- □ Computers ☐ Local Area Networks

□ Word Processing

☐ Electronic Filing □ Wide Area Networks

you have a sound assembler background, or experience of a block structured language (e.g. Pascal), and feel you could make a useful contribution in one or more of the above areas, we would like to talk to you. Also urgently required!

Please write with curriculum vitae Analyst/Programmer, Business Systems Liuk neg
Located at Wordplex's U.K. Management H.Q. in
Reading. To be responsible for all aspects of System
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Design, Development and System 34 or telephone George Shaw on 01-549 9236 (24 hour answering service) Design, Development and Maintenance on our in-hous
IBM System 34.
Applicants should ideally have two years' RGP 2
experience and a thorough knowledge of maspics.
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A challenging opportunity to consolidate your career in a fast moving and expanding group.'

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Imhof, one of Europe's market leaders in the field of electronics packaging requires key personnel for the U.K. management services department to assist in installing and developing new systems incorporating U.K. and European requirements.

Software Engineer Business Analyst to £14.5K

Responsible for fine tuning existing systems, linking of company's PDP70's and evaluating new hardware. Detailed experience and knowledge of RSTS/E, communications and RSX essential. Reports to Systems Manager.

to £12.5K

Reporting to Management Services Manager, the company is looking for an intelligent individual to undertake studies and projects concerning the whole range of business decision making. This is an opportunity to apply an enquiring and analytical mind to a complex area. The ability to communicate clearly both orally and on paper at all levels is essential. 4 years O and M experience is required in an engineering environment.

Analyst Programmer to £11.5K

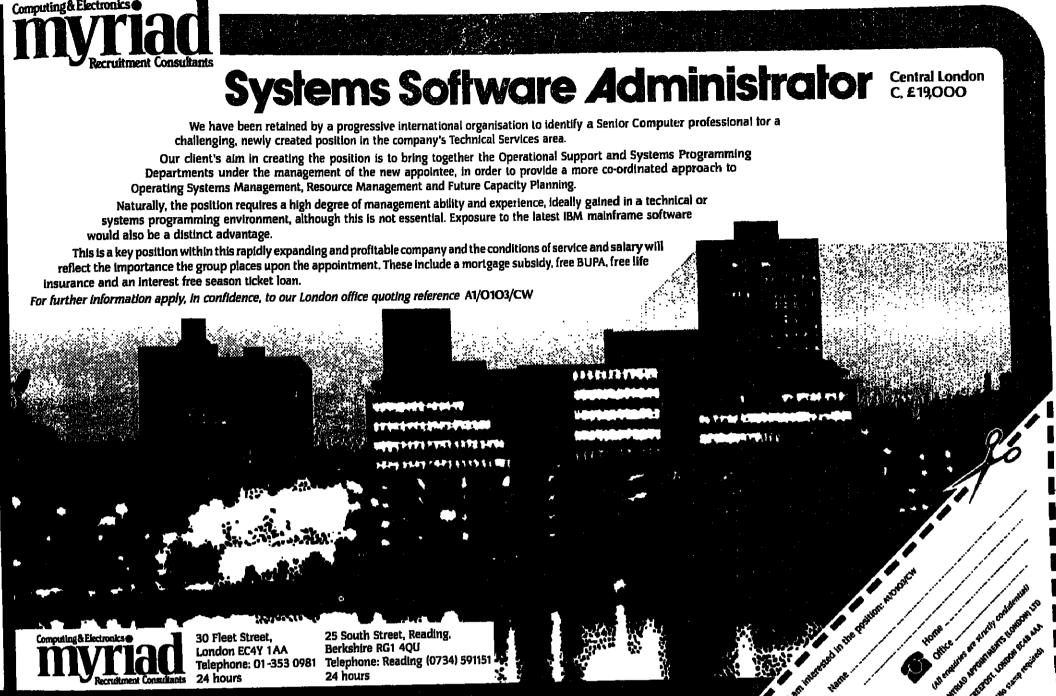
Candidates should have a minimum of 2 years' experience of Basic + under RSTS/E preferably with a knowledge production systems. Duties include system generation for production control system in France and order processing system in U.K., maintenance, package installation and training junior staff. Reports to Systems

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-SYSTEMS & PROGRAMMING SPECIALISTS-

By the way, did you see the jobs featured in our advertisement on 16th February?

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Services for leading and co-ordinating the work of project teams developing a comprehensive range of systems. Must have at least 12 years' experience — including management of systems development in a large organisation – and be capable of contributing to the long term expansion of the

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To lead or participate in small teams working on the development and implementation of specialist projects. Senior positions call for at least 5 years' experience, of which two should have been on a large system. Analysis should have at least three years' experience, including some programming.

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£11,730-£13,929 (Ref: C10/WB) To lead and supervise programming staff within a given development area and take responsibility for technical aspects of their work. Must have at least 5 years' experience (Including supervision of programmers) and a sound knowledge of COBOL and SCL

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£9.345-£10.851 (Ref: C11/WB) To assist with the development of specialist applications. Must have at least 2 years'

COBOL experience. A knowledge of SCL under VME/B would be an advantage.

If you're flexible in your attitudes and willing to get involved, we can promise you extremely rewarding career prospects and the chance to enhance your personal and professional skills through challenging and demanding projects, plus a comprehensive trainina programme.

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For immediate action and a detailed information package, write quoting the appropriate reference number to: Departmental Staffing Officer, Room 207. Town Hall, Euston Road, London NW1 2RV; or telephone our 24-hour Ansafone on 01-837 9988, quoting the appropriate reference number. Closing date for completed applications: 19th March 1984. Camden is an equal opportunity employer. Applicants are considered on the basis of their suitability for the post regardless of sex, racial origin, marital status, disablement or age. All posts are open for job-sharing.



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The Position

is within a small Business Technology's section working in the field of office systems encompassing such areas as information storage and retrieval. text processing personal computing and the associated equipment and software.



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Cheshire The Candidate . Ideally will be a graduate with at least

two years systems analysis experience. It would be particularly beneficial for candidates to have had specific experience of one or more of the areas outlined above. Good communication skills and the ability to operate independently or as part of a roject team are essential personal characteristics.

For further details please ring Tony Roberts on 0270 627206 during the day or 0270 624058 evenings and week-ends. Or write to him at the address below.

OCC Computer Personne 5 Hospital Street NANTWICH Cheshire : (0270) 627 206



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project learn.
Salary in the range up to £12K (Knowledge Engineers) or



Reply to Cathy Jones, Company Secretary. BIT Business Information Techniques Limited Bradford University Science Park, 12 Cempus Road, Bradford, West Yorkshire BD7 1HR

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ESSENTIAL prerequisites for this position are: 3 years FORTRAN in a scientific en

SALARY is negotiable

Please submit applications, enclosing full c.v., to: COMPUTER EXPLORATION SERVICES LTD Burleigh House 13 Newmarket Road Cambridge CB5 SEG

Or contact Gerard Hurrell on Cambridge (0223) 315933

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A large subsidiary company of a leading internation engineering group is creating an in-house Systems Department to support a major investment in

Mein computer systems, real-time and batch are processed remotaly on IBM equipment. On site mini and micro-computers will be used increasingly.

Current and future areas of systems development covering the whole range of the Company's activities, include COPICS manufacturing systems, CAD/CAM, Office automation and Financial projects.

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MIDLANDS & NORTH SOUTHERN ENGLAND

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nity for Senior Field Engineers mical Support Engineers to move into lational Technical Support. With a product range from powerful business Micros to sophisticated distributed systems based on 32 bit superminis, each engineer will become the technical support authority on specific products, providing expert support to regional engineers. Provided with on-going training in the UK and USA, it is also important that the selected individuals familiarise the UK engineering organisation with newly released products and/or system modifications.

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We expect you to have at least two years of experience on Perkin Elmer with Reliance. The candidate will be expected to participate in the applications of Perkin Elmer Software including Sysgens, environment creations etc.

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Owner's Abroad have a large a array of communications equipment including DCX 840 and 850's, and are looking for an individual to run their network. This exciting role would be ideally suited to an applicant who has specialised in communications within an operations environment.

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The CDC is a modern, purpose-built unit housing an IBM 3033 (16 mb), an Anidahl

5860, twin IBM 3083's (16 ± 24 mb) which forms the hub of a highly sophisticated

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The network supports a range of high technology products and services with their own dedicated minicomputers including Viewshare, Comet, Cosmic and ARTEMIS.

Plans to expand the Company's market penetration have created vacancies for:

 $This is an excellent opportunity for accomplished {\tt Technicians} to {\tt join a small}, {\tt highly}$

For this position, you should have gained considerable experience of DEC hardware and software and be fully conversant with the latest products on offer from this

Manufacturer, Experience of interfacing DEC hardware to IBM mainframes within a large network would be seen as a distinct advantage. Initial responsibilities will be

For this position, you should have considerable experience of personal computers

The above positions require practical experience of interfacing minis and micros

 $communications \, protocols \, and \, CCITT \, are \, highly \, desirable. \, The \, positions \, will involve$

central 1stel computing resource. You should be able to work with the minimum of

Both of these positions are integral in Istel's on going strategy of expansion and offermulations are integral in Istel's on going strategy of expansion and offermulations are integral in Istel's on going strategy of expansion and offermulations are integral in Istel's on going strategy of expansion and offermulations are integral in Istel's on going strategy of expansion and offermulations are integral in Istel's on going strategy of expansion and offermulations are integral in Istel's on going strategy of expansion and offermulations are integral in Istel's on going strategy of expansion and offermulations are integral in Istel's on going strategy of expansion and offermulations are integral in Istel's on going strategy of expansion and offermulations are integral in Istel's on going strategy of expansion and offermulations are integral in Istel's on going strategy of expansion and offermulation are integral in Istel's on going strategy of expansion and offermulation are integral in Istel's on going strategy of expansion and offermulation and offermulation are integral in Istel's on going strategy of expansion and offermulation are integral in Istel's on the Istel's offermulation and offermulation are integral in Istel's offermulation and offermulation are integral in Istel's offermulation and offermulation are integral in Istel's offermulation are integral in Istel's offermulation and offermulation are integral in Istel's offermulation are integral in

answering service) or 0785-660051 (Evenings and Weckends) or alternatively write to him with brief career details at the SCR Birmingham address enclosing a daytime

ran attractive relocation package where applicable. For further information please

responsibilities will include establishing the IBM PC as a front end device within their

Communications Network, development of the DEC Rainbow product and colour

skilled Computing and Consultancy Group engaged in the forward planning of bardware requirements within the istel Network Services Group.

for the expansion of a Video Tex system upgrading from PDP to VAX hardware, combined with the development of a distributed dealer network.

which should ideally include the IBM and DEC range of equipment. Initial

to large scale IBM mainframe installations where knowledge of the various

Client contact, examining the Client's current and planned configurations and proposing methods of creating interfaces between such configurations and the

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Central to our applications software development is the use we make of IBM's database management system IMS - for example we have a network of logically related databases consisting of over 70 million segments. (Our IBM 3081 runs with 3380 discs using Xerox laser printers.)

But Programming at Hambro Life is also different because the company is different. Not content with its position as the country's largest unit-linked life company and one of the top 50 companies in the U.K., it is now embarking on a programme of diversification and expansion that offers growth opportunities for everyone. In 1983, we joined with several other leading companies in the financial sector to form <u>Allied Hambro</u> – which is just about the most revolutionary concept in personal financial services today providing a working environment of unmatched diversity and opportunity).

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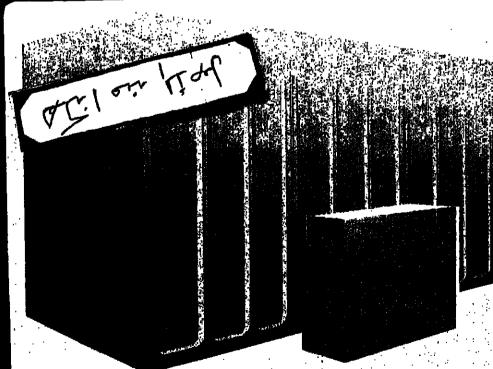
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The successful candidate will possess knowledge of engineering software packages and the ability to evaluate current packages in relation to the Company's requirements, and have the supervisory skills to manage a small team of programmers who will support and advise the computer users in the Engineering areas. Candidates, over 25 years of age, should have experience of data processinghardware and software, knowledge of IBM computers and possess the necessary motivation to succeed in a senior position. A degree (or equivalent) in Engineering, Physics or related fields will be required supported by experience of working in an engineering

We can offer competitive salaries commensurate with the level of appointment together with excellent conditions of service. A generous relocation package is available, where appropriate, to

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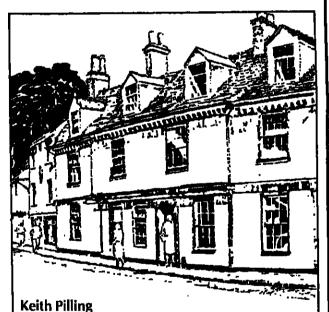
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A special environment

Over 30% of those 400 employees are based at Ipswich in our Research & Development Department - into which we consistently channel a high proportion of our profits to ensure continued improvement and development, and to develop new products, using a wide range of technology.



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We like people to take responsibility for their work; to take pride in it; to develop and grow. If you have potential to progress upwards, we'll encourage you. If your interests develop in other areas, we'll encourage that too.

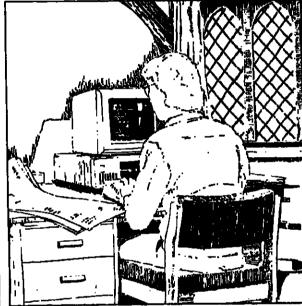
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ARTEMIS programming



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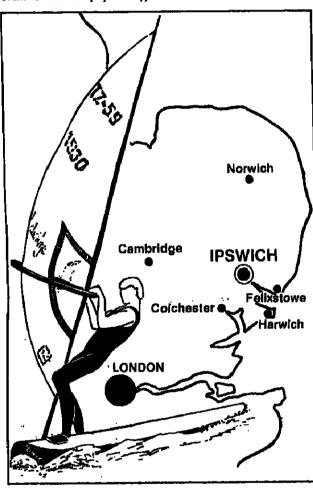


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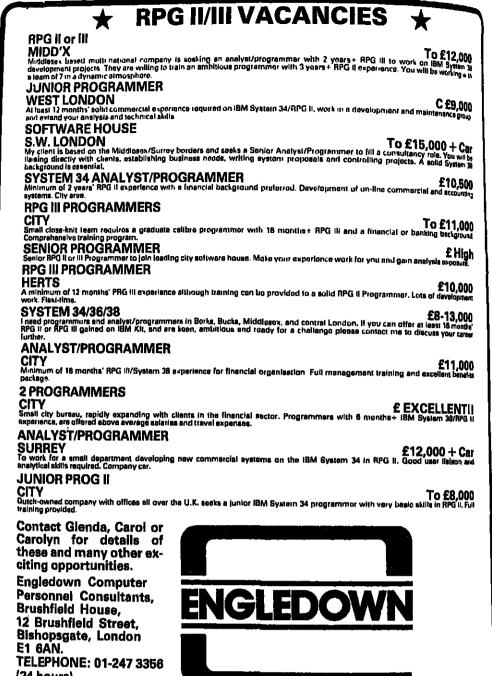
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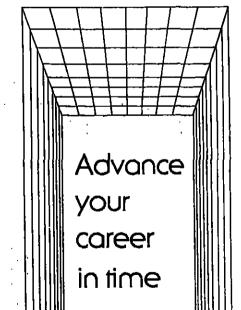
RESEARCH ENGINEERS

Ref. CW 1811

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SYSTEMS & SOFTWARE ENGINEERS



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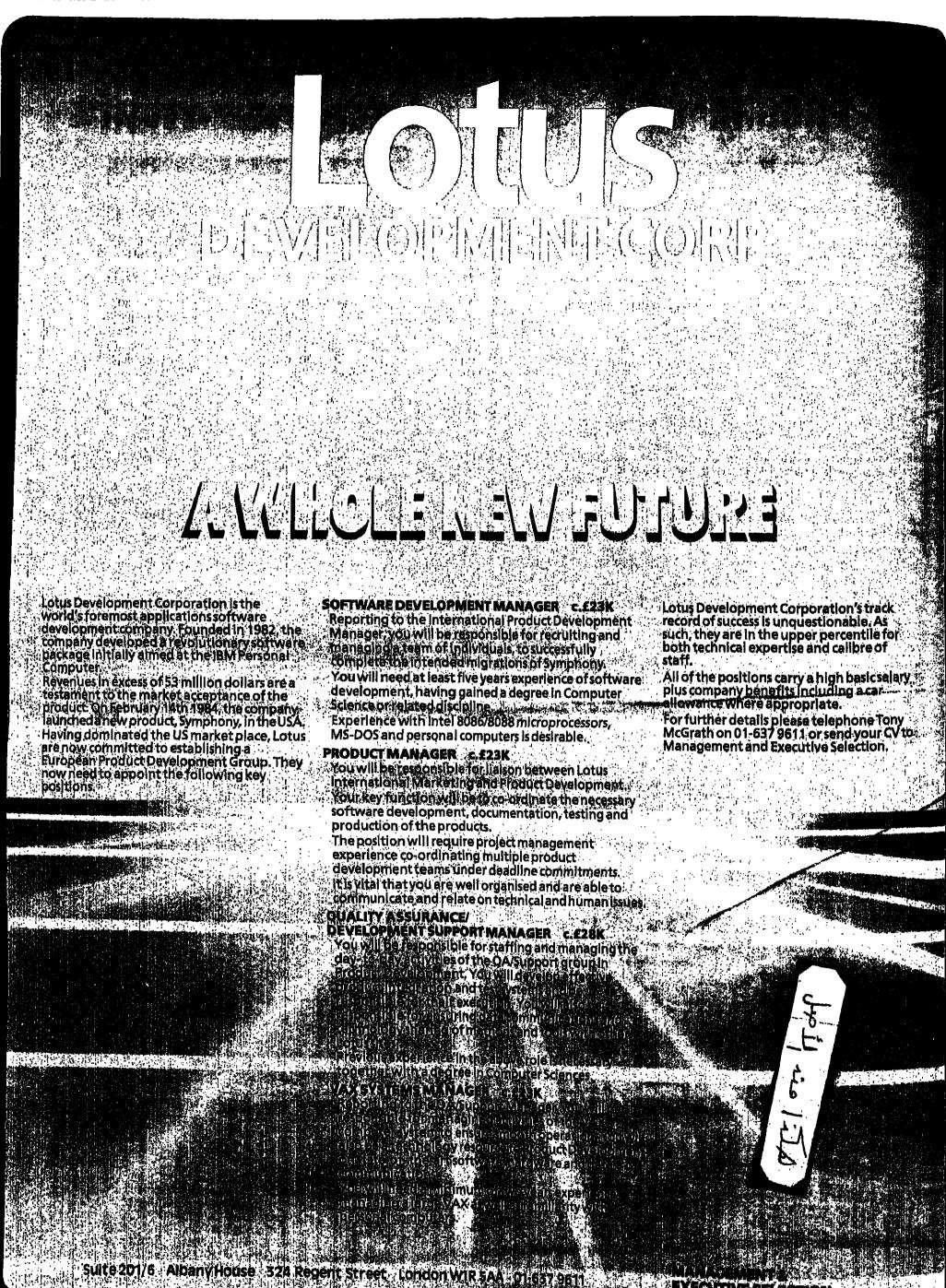
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Senior Prog Englneer Backgrd Analysts Software Engs Software Engs

Programmers Systems Prog Anal/Prog Prog Anal/Prog Anal/Prog Progs

Systems Prog

Prog Anal/Prog

IBM S/38 RPG III + MAAPICS MVS JES2 VTAM MVS JESZ YTAM FOCUS ANY IBM TO LRN PC IBM TOTAL SHADOW COBOL OS/MVS JESZ ASSEMBLER IMS OS/MVS IMS-DB/DC COBOL

SERIES I RPS ASSEMBLER OS/MVS PL/1 IMS-DB TSO/SPF OS/MVS PL/1 IMS-DB/DC TSO/SPF OS/MVS PL/1 ASSEMBLER JCL TSO/S OS'MVS PL1 IMS-DB/DC DATA DICTIONARY TSO/SPF

OS:MVS MARK IV VM:CMS Midland: Surrey VIEWDATA EXPERIENCE

DOS/VS CICS SNA VSAM RJE POWER OS/MVS PL/1 ISPF JCL DIALOG

Skilla Required VME/B 2900 TPS COBOL VME/B 2900 IDMS TPMS COBOL VME/B 2900 COBOL COBOL JACKSON G3 Berks 'SYSTEM 25 ASSEMBLER

Beds

Landon SYS 4 VME DME COBOL TPS TPMS (CONVERSION DME – VME) 2900 IDMS TPMS VME COBOL W. England

2900 VME IDMS TPMS

DRS PASCAL C + COMMS EXP 2000 + VERY GOOD PASCAL 2000 VME IDMS TPMS OMAC TPMS TO AUDIT TP SERVICE

Berks Londn/Middx SYS 25 ASSEM + S/WARE ENG 2000 COBOL IOMS TPMS 1900 PLAN VME IOMS 2500 VME/B IDMS COBOL TPMS COBOL GOOD SYSTEMS EXP TO INSTALL NEW TPMS RELEASES

Skilis Regulred ATE HEWLETT PACKARD EXP DATA GENERAL BUSINESS BASIC OMAC DEVELOPMENT EXP, HONEYWELL DPSS ± ICL UNIVAC 1100 COBOL ± 550

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Skills Required
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DOS/VSE CICS VSAM TOTAL
VAX YMS VAXBASIC FMS
DEC VAX

DEC VAX DEC VAX WANG — INSTALLATION OF MARDWARE AND SOFTWARE IRM/NSA

Overseas !

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THS IS AN OPPORTUNITY to Join our large team of Consultants stready working in the Guif. We have more experience than any other UK company in arranging contracts in this area, and your application will be treated confidentially and with great care. Should you be accepted, we make all the arrangements for you, right up to the point of installing you safely in your first class hotel.

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ROGRAMMERS & ANALYST PROGRAMMERS £20,000 TO £22,500

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k 88c Engineering or related job ext 4 to 8 years' overall experience Preferably 2 years' as an analyst P(7), TSO/8PF, 08 JCL, essential PAM Fellow development methods

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والرواق والمتعارض والمتعار

In an everchanging market we are constantly seeking d.p. professionals at various levels to meet our clients' requirements. Below we have detailed a selection of our clients' needs, however should you be looking for an alternative career change, other than those mentioned, we are also in an excellent position to advise on your next move. For more information call us or return the FREEPOST coupon today.

RSTS/E EXPERIENCE

Negotiable

London Our client, Digital Equipment Company requires an experienced computer professional to work within the customer support function based in London. You will be involved with a wide variety of environments, installing, configuring and sizing system software and becoming involved in developing specific applications. Full VAX/VMS training will be given to the successful applicant.

PROGRAMMERS, SENIOR PROGRAMMERS AND ANALYST PROGRAMMERS

Berkshire Our client, a widely diversified manufacturing organisation seeks high powered individuals to work on development of some of the most advanced commercial

Ideally you will have a degree, be 32 years of age or younger and have at least 18 months' experience in a Systems Development environment.

TRAINEE SYSTEMS PROGRAMMERS

Northern Kent We seek a CiCS orientated applications programmer to be fully trained in the art of DOS/VSE systems programming. Career potential! it's unlimited.

REF 0816

ANALYSTS AND PROGRAMMERS

Negotiable + Perks

Our client a well known merchant bank seeks a number of Analysts and Programmers for their IBM installation in the City. Analysis should possess experience of banking environments while programmers must have had COBOL experience in an IBM CICS environment.

REF 0817

SYSTEMS PROGRAMMERS AND **CONSULTANTS**

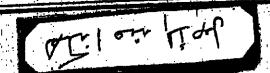
London and Hants

£12,000 to £25,000

A well established consultancy seeks IBM orientated systems programming professionals with experience in any of the following areas: DOS/VSE, MVS/SP/XA, SNA, VTAM or CICS

REF 0818

By retu	ım of post, pi	lease send a	n application	n form and c	lient company	profile to:	THE STATE OF THE S
Name:	1.4					*******************	
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Real-Time Software

CAREER OPPORTUNITIES

£9K to £15K neg.

NW England

The advent of information technology has created the need for highly advanced communications and message processing systems dependent totally on the quality, sophistication and innovation of system software. The opportunity to contribute to the development of future generation systems is currently being offered by a major international force in communications technology in the building of a new specialist team. Current opportunities exist for: -

PROJECTLEADERS

Ref: - W/171

SYSTEMSANALYSTS

Ref: - W/172

三位重要。

The ideal candidates will be: -

PROGRAMMERS

Ref: - W/173

• 23 to 40 years of age

Qualified to BSc or equivalent

• Currently employed within a Real-Time software environment (either commercial or defence)

Conversant with Block-structured high level languages (eg. PASCAL, CORAL) and operating systems such as CONTEXT or RSX11

Some experience of Assembler on minis or micros would also be an advantage but training in all areas will be offered to successful candidates.

You will be involved in challenging work incorporating multi-processing and distributed processor systems in message processing, Command, Control and Information systems and packet switching. The software development will be on VAX 11/780. PDP/11's and 8086's.

The benefits include an excellent negotiable salary and working environment with a full relocation package for the successful candidates with the opportunity to become an integral part of a special team developing tomorrow's technology.

For an initial and confidential discussion please call Bob Archibold on Newbury (0635) 33445 quoting the appropriate reference number or write in strict confidence to: -

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A rapidly expanding and profitable major BRITISH company involved in the Design and Manufacture of Microcomputer Systems seeks Sales Professionals to sell their products to the OEM market place.

The vacancies, which are entirely due to the speed of controlled growth (50% growth target 84/85) are in two vital areas of the

Super-Micro Systems UNIX Multi-user and Multiprocessor Systems for Commercial, Engineering and Scientific Environments.(Ref:G1/101)

Memory and Micro Products including Multibus and VMEbus Compatible Memories and Processors and Semi-Conductor and Bubble Memory Systems (Ref: G1/102)

All products represent the latest State of the Art Technology and the Sales Force is backed up by strong Management and

The total income package is impressive, with high Basic Salary and generous Commiston/Bonus structure giving earnings in excess of £20,000pa, plus Company Car, Expenses and 5, weeks annual holiday.

If you have experience in selling to OEM's or Key Accounts either for a Manufacturer or Distributor and can provide evidence of a good track record in system or card level sales, contact us quickly, in the strictest confidence. We will arrange local

Send your replies to Geoff Garside, Managing Director

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SYSTEMS ANALYSTS PROGRAMMERS

to £13,000 to £10,500

IBM 3083, MVS/JES 2, CICS, TSO/SPF — EASYTRIEVE

Established in 1919, this British-owned electrical company based in North London is a modern day success story with group profits for 1983 reaching £13.3 million, an increase of over 50% on 1982.

Following their commitment to Computer Processing with a strong directional strategy to MIS, the company has recently upgraded to an IBM 3083 running MVS.

Parallel developments are required to utilise the power of the new hardware, including commercial online systems and piloting CAD systems within technical areas of the company. Series 1 configurations are also to be implemented at each manufacturing location.

These developments promise to create an exciting and challenging period within the computer services department and we have been retained to assist in the recruitment of highly skilled personnel to complement the existing team.

Applicants for the SYSTEMS ANALYST positions should possess solid Analysis experience gained in an IBM environment and should have taken a project from design through to implementation; exposure to online systems and database techniques is desirable. Successful candidates, who will be self-motivated individuals with the ability to communicate effectively at all levels, will be involved at all stages of systems project development covering Financial, Marketing or Manufacturing

We are also seeking PROGRAMMERS to develop online and batch programs working as part of a project team assigned to a particular development area. A strong IBM COBOL background is the prime requirement for these positions. Although a knowledge of CICS, Database and/or EASYTRIEVE would be advantageous, both in-house and external training will be given where necessary.

In addition to a competitive salary and the opportunity to work in a progressive and demanding environment, the company offers a full range of benefits including Pension and Sick Pay schemes, Share Ownership Option, Saving Related Share Option, Subsidised Restaurant and five weeks' holiday.

For further details of these positions, please contact MELVYN **DEARLOVE at Computer Two Thousand.**

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Tel: 01-636 7584 (24-hrs)



Contracts in America!!!

\$40,000+ per annum

We have been retained by a major company in the United States of America to supply 30 experienced computer programming personnel for 12-month contracts. The locations are varied but include Baltimore, Boston, Washington, Chicago, Philadelphia and New York. Prospective candidates should be available to start any time between now and June 1984. The skills required

- ★ IBM COBOL IMS and ADF IBM COBOL with IMS DB/DC IBM PL1 with IMS DB/DC
- IBM MARK IV HONEYWELL GCOS COBOL with DM IV
- ★ ICL or IBM IDMS with COBOL

★ UNIX and C

An excellent package is offered and will consist of the following:

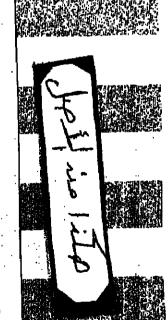
- Excellent rates of pay (\$800-\$900 per week) Return air fare
- Accommodation assistance Car assistance
- **Medical insurance** Tax and Legal advice
- Support from our U.S. office in Boston

Programmers who are currently in permanent positions are welcome to apply for these posi-

Interviews will be held in Central London during March and April.

To discuss these opportunities please telephone Steve Whiting or Sandra Carey on: Farnborough (0252) 516141.

ELMDON HOUSE. 2281 COVENTRY ROAD, SHELDON. BIRMINGHAM B26 3PS Tel: 021-742 4431 HANTS, GU14 7UD. Telex: 858 233 Tel Famborough (O252) 516141







DIRECTOR - INTERNATIONAL **Management Information Systems**

Interviews in Surrey 13 and 14 March

An American multi-national motal packaging manufacturer with its European Headquarters in Surroy scoks an expanenced data processing professional to be based in the UK but who will travel regularly librough Europe. This position requires a progradic individual who possesses creative skills and who is sensitive to a multi-national environment. A very attractive salary and benefits package.

Responsibilities include the management of an international data centre (IBM 4341), common systems development functions, serving European sites (IBM S34-36) and coordination of MS activities in Uk, Ireland, Germany, Spain, Italy and Cyprus, International exposure and knowledge of European languages would provide a significant advantage. Knowledge of accounting, manufacturing, inventory/distribution applications is desirable

If you are a dedicated results orientated manager who possesses a high level of strategic and planning skills and who enjoys challenge please confact Mrs Suzanne Birch on

Bracknell (0344) 55777(day) 24117(evng)

CEO EXECUTIVE & Professional Recruitment Consultants Limited PARR HOUSE, 52 BROADWAY, BRACKNELL, BERKS RG12 1AG TEL BRACKNELL (STD 0344) 55777

Kongsberg Systems Technology Limited, a member of the Kongsberg Group of Companies, have a long-standing reputation as innovators in Computer Aided Manufacturing. Opportunities exist for the following CAD/CAM specialists:

PROJECT LEADER

A FORTRAN specialist, who can lead a small team of soft ware engineers in costing, design, coding, testing, installation and support of software for mechanical NC tape preparation. The successful candidate will possess a degree or equivalent in a science or engineering subject and have at least 4 years' FORTRAN experience using DEC computers

SOFTWARE ENGINEERS

NC part programming experts, to be part of the above team of software engineers. The successful candidates will possess recognised mechanical or production engineers, the qualifications and have at least 3 years' experience using a CAD/CAM system. The ability to write post processors in FORTRAN would be advantageous.



Highly competitive salaries are offered, together with 20 days' annual holiday, free BUPA and Life Assurance Scheme. A contributory Pension Scheme is available after qualifying period.

Please write, with c.v., or telephone for an application form, to: Sally Pearman, Kongsberg Systems Technology Limited, Priors Way, Maidenhead, Berkshire SL6 2HP.

Ferranti plc

Programming Management ...at the centre of a high technology, expanding company

The Internal Computer Services denartment, based at Hollinwood, Manchester provides commercial data processing services to the Ferranti Group companies — using 2 ICL 2966 mainframes and ME29's. Conversion from George III to VME 2900 is currently underway.

As Assistant Programming Manager you will be responsible for the organisation and motivation of 15 programmers in four project teams engaged in writing new applications programs for financial and manufacturing systems. Current developments include the use of IDMSX

The planned expansion and development of our Internal Computer Services will lead to broader responsibilities and offers excellent scope for career extension. Salary and benefits are those expected of a large market leading company.

` **t**r.

Candidates with relevant ICL Cobol experience and evidence of managerial ability should send c.v. or telephone for an application form to: J.H. Hughes, Personnel Manager — Central Services, Ferranti plc, Hudson Street, Hollinwood, Lancs. Tel: 061-681 2000.

FERRANTI

selling technology

SYSTEMS AND PROGRAMMING

IBM PROGRAMMER/ANALYST £9,000 + Mortgage

To join a small team developing and maintaining CiCS, DIJ Programmes. Training will be given to candidates with 1-2 years IBM COBOL experience within a DOS environment. This is an excellent opportunity for a keen ambitous young person who would fibe to move into an on-line environment using the latest Database techniques. Excellent benefits package which includes subsidised mortgage, health insurance and STL.

G/W 2463

ICL SYSTEM PROGRAMMERS c £13,000

An exciting opportunity has arisen for a number of systems programmers with 3 years + 17k3/DMS to become involved in a major development plan over the next couple of years. The company operate dual 2956 with DRX operating system and SCL. The sensor position would suit someone with either management or supervisory experience. Company benefits include a house purchase otherne, season ticket loans, etc., after a qualifying period.

E/W 4048

IBM COBOL PROGRAMMERS TO £11,500

Can you offer around 2 years COBOL, CICS and DIJ1 experience, and do you wish to enhance your professional skills through challenging and demanding projects?

Then this job is for you. Very interesting development profess and excellent appearance.

£12,500

My client, an international banking group, requires an experienced programmer for its D₁, expansion plans. This will be a challenging appointment with an organization dedicated to making the best use of its tophisticated programming facilities. A thorough knowledge of UNIX is essential on any machine and experience in a financial environment would be an asset. All banking benefits apply.

MIW 4296

These positions are just a latic selection from our cateraive database of jobs in London and the South-East. If you cannot see a position advertised for your particular skills, or are considering re-locating or a change of hardware; a quietk phone call will put you in topic with a criticular specialising in your field. 70% of jobs in this industry are never selection. Why not let us tell you about some of them? We look forward to hearing from you.

£11.000 neg.

This is an excellent opportunity for a D.P. professional to take up a key position within this well established insurance company. The company house Wang VS mini computers and ideal candidates will have a minimum of 2 years experience using COBOL. You will play an integral part from feasibility to implementation of a range of insurance and business systems. This is an interesting position offering carear prospects, exciting development projects and a pleasant and flexible working environment.

MAW 434.

ALL AREAS £8-14,000

We have too many positions to list! Our clients are in the banking, manufacturing, retail, lasurance and software fields and are tooking from 12 months to 5 years IBM experience, either with COBOL, ASSEMBLER, RPG II or RPG III. If you would like to further your career and increase your salary in a challenging environment. Call in for further details of these positions. CGEN

ANALYST/PROGRAMMERS FOR ICL

LONDON AND HOME COUNTIES

I have a number of companies with openings for ICL people whose experience has been gained on any ICL configuration. My clients include insurance companies, household names and software houses, all offering technically interesting and challenging work to the right applicants. If you have 2 years COBOL experience of ICL under VME or VME/B or ME/29 with IDMS of TP-Masshills you could be of particular interest to pay number of these companies. The work offered is mainly development projects, and salaries vary with experience, but will be commencements with your background.

Telephone now to discuss your requirements and career prospects.

TO £12,000

My client is internationally renowned in the leisure industry and is seeking an analyst/programmer to join a user support group, developing and supporting accounts, sales and marketing applications. They have recently converted to MVS and require a minimum of 2 years IBM COBOL, preferably with MVS and on-line experience to join a CICS team. Lots of user contact and sound promotion prospects.

C/W 4330

FORTRAN PROGRAMMERS £10,500

An interesting opportunity with a leading travel organisation offering progressive career openings to skilled Fortran programmers. Initially, you will work in amail professional teams developing on-line transactions, eventually becoming responsible for seeing projects through from feasibility to implementation. This company's exceptional growth rate has been echieved by clear basiness objectives and this will be a chance to join an expanding outif and make a valuable contribution to its fulure.

ICL PROGRAMMERS - ALL

CENTRAL LONDON My client is in the financial sector and requires a number of additional COBOL programmers at all levels to John their development teams. The lifest candidates should have 2 years 4 ICL 2900VMB and some experience of 1DMS OR you may have a good knowledge of Atsurance or Pensions on any ICL machine. This is an outstanding opportunity to further your skills and become involved in an interesting and stimulating environment.

Brushfield House, 12 Brushfield Street Bishopsgate, London E1 6AN

Telephone: 01-247 3356 (24 Hours)

TO £15,000

Based in Middx., my client, a major U.K. systems house, leaders in its field of Turnkey Systems, is expanding, thus it requires a number of D.P. professionals. You must have 18 months + D. professionals. You must have 18 months + D. professionals. And the COBOL, and/or BASIG + and have a good knowledge of DECVAX machines. There are plenty of prospects for aspiring affairs, and this could involve world-wide travel BEsides a good salary, with regular reviews, benefits include a bonus scheme, free life insurance, and B.U.P.A. HW 4346

HEWLETT PACKARD — COBOL TO £12,500

Are you currently an H.P. Programmer with little or no analysis involvement and yet the ambition to succeed in that area? This London based media organisation dedicated to the computerization of their company can offer you extensive user listons, specification design and analysis training. You must display a thorough knowledge of COBOL, HP3000 and its utilities. For those who already have analysis skills, the chance is offered for you to test them in a challenging development ehvironment. Call now for details.

H/W 4033

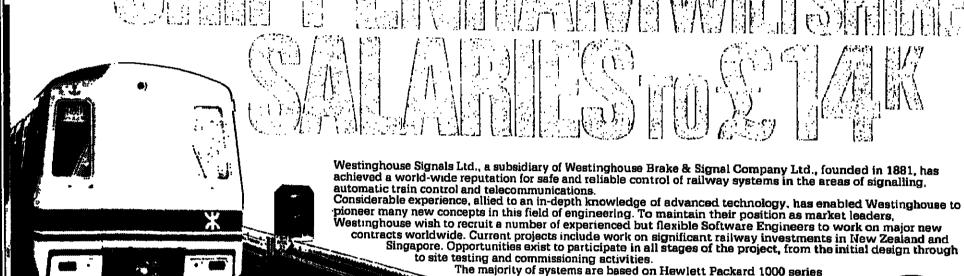
£8,000-£13,000

Looking for a position which can offer you extensive customer liaison, analysis involvement and travel, whilst Looking for a position which can oner you costomer liaison, analysis involvement and travel, whilst developing exciting systems in a commercial and financial velo? My Surray based clients can give you just that! To qualify you must have experience of one or more of the following; COBOL, BASED+2, DIBOL, RSTS/B or RSX-II-M. At the present time the company deal mostly with DBC/PDP machines although progression to VAX/VMS is envisaged in the near furnte.



COMPLTER PERSONNEL CONSULTANT

REAL-TIME SOFTWARE ENGINEERS



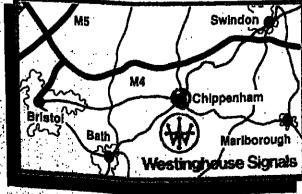
minicomputers with programming being done in HP Assembler language. More recent systems have been implemented using Coral 66 and there are several projects involving Z80, Intel 8085 and TI9995 microprocessors being developed currently. Westinghouse Signals

Sufamo Project Lender

You are likely to have a minimum of six years experience in real-time software design and implementation, and experience of working with mini and/or micro computers using high and low level languages. You will be expected to lead a team of software staff, the size of which depends on the nature of the project (anything from 2 to 7 is typical). A proven track record in the implementation of projects from concept to installation is essential.

Senior Systems Analyst

You must have experience of working with mini or micro computers using high level and low level languages. With a minimum of four years relevant experience you would be expected to join a software team and undertake detailed systems design work. Previous team leadership would be an advantage.



Systems Analyst

Having spent at least three years in a real-time engineering environment and gained experience of software design, coding and integration you would be expected to undertake system and program design work to the constraints given by more senior members of the software team. Additionally, you would be expected to oversee the work of Programmers and Analyst/Programmers who will implement your designs. Again, experience of mini or micro computers, using high or low level languages is essential.

Analyst/Programmer

You will have experience of software coding and implementation, previous program design experience would be an advantage. Knowledge of such languages as Coral, Algol, Pascal and Assembler, as well as exposure to mini or micro computers is required. Working closely with the

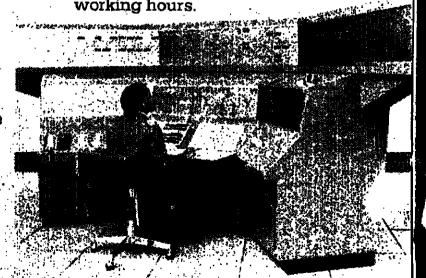
For further information, please contact Mike Beesley, Sanderson Computer Recruitment Ltd. 41/43 Baldwin Street, Bristol 1. (0272) 211741. When writing please supply a telephone number at which you may be contacted.

programmers, you will be required to implement the designs provided by the Systems Analysts.

Programmers

A number of opportunities exist for Programmers with a minimum of 12 months experience of software coding and integration, preferably gained in a real-time engineering environment. Knowledge of Coral and/or Assembler is a requirement. but other high or low level language knowledge gained on mini or micro computers would be considered.

In addition to a very attractive salary and excellent career opportunities, Westinghouse offer a number of additional benefits which include an outstanding relocation package where applicable and flexible working hours.





We're never Analysts/ Seniór Analysts

As Britain's leading retailers of video, home computing and photographic equipment, we have to be flexible. That way our 280+ branches nationwide can give the best service to our customers. That way we will continue to expand.

Our computing function is always open to new ideas. Our most significant decision lately is to install a new IBM 4381 which will enable us to meet our new objectives.

Immediate opportunities exist for extra staff at our head office in Edgware,

with IBM-based retail applications experience, a sound understanding of commercial disciplines, and familiarity with MVS and CICS.

Senior Programmers Salaries c.£12K.

ideally with retail applications experience but essentially with proven expertise in COBOL and development applications using MVS and CICS.

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ANALYST PROGRAMMER

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Salary is in the range £10,964 - £12,420 including Inner London Weighting, Benefits are those normally associated with a large progressive organisation. Mease write with full personal and career details, and quoting ref REA/10132/060, to: Assistant Personnel Manager [HQ Services], British Gas, 59 Bryanston Street, London W1A 2AZ.

Closing date for applications: 15th March 1984. BRITISHGAS

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£8,781-£9,339 p.s. The network is currently available from 7,30 s.m. to 6,30 p.m. Support staff provide users with a telephone contact throughout this period. Primary duties are problem resolution, network monitoring and equipment

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Senior Administrative Grade — Salary Scale £7,494-29,025 (Grading currently under review) We are looking for an experienced person to maintain and develop the micro-computing network facilities within the Darlington Fleshth

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The person appointed will be responsible for the provision of computing services including the analysis, programming and day to day operational, requirements of computer systems. The post holder will be working on ICL DRS systems equipment.
The post offers excellent training facilities (including ICL training courses) and good career prospects for persons of the right calibrathe present incumpent has been promoted within the N.H.S.
Application forms and job descriptions can be obtained from the Personnel Department, Menjorial Hospital, Hollyhurst Road, Darlington, Tel. 0325 480100, ext. 3341/2.

Closing date March 16, 1984: Applicants who have not heard by March 30, 1984 may assume that they have been unsuccessful. GRAVESHAM BOROUGH COUNCIL

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For application form and job description please contact Personnel Officer, Civic Centre, Gravesend. Tel: Gravesend (0474) 64422, extension 273. Closing date 9th March, 1984.

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Computer Laboratory

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Applications are sought from gradu stes with experience in micr

ates with experience in micro-electronic hardware design and con-struction. To assist in developing the hardware aspects of the computing service: particularly in the field of microcomputers and communica-tions. A good first dagree in Electronics or related subject essen-

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Quote Ref. RV/228/CW.

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Required to teach on Computing and Informatics Honours degree. Applicants must have relevant industrial, commercial, research end/or tosching experience.

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Permanent and temporary (2 to 3 year) contracts are available.
Further details and application forms — to be returned by Friday, March 23, 1984 — are available from Personnel Officer, Plymouth Polytechnic, Drake Circus, Plymouth PL4 SAA. Tei: Plymouth (0752) 284839.



Plymouth Polytechnic

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Centre for Computing and Computer Science CHAIR OF **COMPUTER SCIENCE**

Applications are invited for a new Chair of Computer Solding which will become available from 1st October, 1984. The appointment is intended to strengthen the respect base of the Centre. Preference may be given to candidates with an established research record in one or more of the areas of Software Engineering, Man/Machine Interaction, Intelligent Knowledge Based Systems and Columnications. Academic or appropriate industrial experience will be considered.

ialary in the professorial range, wit

Further perticulars available from the Vice-Chancellor, University of Similar-lam, P.O. Box 363, Bhraingham B15 271, to whom applications (15 copies: 1 from overseas applicants) should be sent by 27th April, 1884.

CARDIOVASCULAR RESEARCH UNIT COMPUTING IN CARDIOLOGY

reply please quote Réf. No. 5100/2P

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year.

Application forms and further particulars
available from the Percentel Office,
Royal Poetgradente Medical School, 150
Ducane Read, London W12 OHS quoting
Ref. 2/207/CW. Closing date: 22nd March, 1984.

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Scale 9: £8,367-£10,277 OR Scale 4: £7,404-£9,025 (depending on experience)

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BOX NUMBERS

Box number replies should be addressed to:

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experience, two of which should have been in systems analysis and must possess an appropriate University Degree or Membership of the British Computer Society. Experience of I.C.L. Cobol and/or experience on a System 10 or 25 will be essential and a knowledge of ICL computations and to a local computer society. of ICL communications protocols would be an advantage.

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Application forms and job description are available from the Personnel Office, Municipal Buildings, Dunbeth Road, Coathige ML5 3LF, Scotland (0236-24941, Ext. 231).

Completed form must be returned by March 10th, 1984.

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To act as Project Manager for a wide range of computer applications. Knowledge of developments in computer systems/herdware and prova analytical skills essential. The ability to organise, form good working relationships and contribute effectively to a small team is required. Will have good written and spoken skills.

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Closing date for the return of completed applications to the above address to 19 March, 1984. uitable for job sharing

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Grade: Scale 4-6 Salary: £8,264-£8,712 according to qualifications and experience.
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Salary within Rangs 18 for Other Academic Related Staff, between £8,310 and £8,530 plus £1,188 London Allowance a M R C CLINICAL RESEARCH CENTRE (NORTHWICK PARK HOSPITAL) WATFORD ROAD, HARROW MIDDLESEX HA1 3UJ.



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HEAD OF COMPUTING AND STATISTICS DIVISION

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The person appointed will be required to head the computing and statistics service provided to the staff of the Centre and to maintain a close association with the omputing service of Northwick Park Hospital.

The appointee will have overall responsibility for the esearch direction of the division and will be expected to carry out a personal research programme. Candidates should be of high scientific standing, should have a ubstantial background in computer science and the application of computer technology to biological and

The Clinical Research Centre may be visited by direct intinent and prospective candidates should disc details of the post with the Director, Sir Christopher Booth Further perticulars can be obtained from the ctor's Office, Clinical Research Centre, Watford Boad, Harrow HA1 3U.J. Telephone 01-864-5311 ext. 2220.

Closing date for epplications: 17th March 1984

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to £15K

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SYSTEMS CONTROLLER

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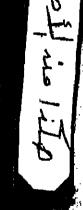
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March 8 Issue

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This is just one of many careerlinked features to be published during 1984. Our aim is to talk to individual groups of readers, both as employees and as people with particular skills and problems and is just one indication of Computer Weekly's commitment to providing the platform needed by recruitment advertisers when

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SALES EXECUTIVES FREEDOM TO BREATHE, ROOM TO GROW!

Many sales people never reach their full potential, because they are constantly frustrated by executive whim or stifled by corporate edict. How nice it is, therefore, to make available such jobs as these in

SOUTH EAST ENGLAND and the **WEST MIDLANDS**

that not only provide a 'ground-floor' opportunity within a fast growing and progressive organisation, but which also gives the individual salesperson freedom of action, scope for creative selling and real involvement in shaping the destiny of the company.

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| SALES BIT

Quality of Management – 85

A trainer must have the talent to convince

THE staging of sales training is for many companies a process that seldom gets beyond the point of good intentions.

probably be running his owning pendent outfit and earning a lam more than the typical companyes afford, or be a "big wheel" in major training outfit.

Everybody acknowledges that selling and product training is an sales organisation; that all salespeople need to achieve at least a minimum threshold of selling skill and product knowledge and that this basic requirement should be sustained and augmented on a sales organisation; that all continuing basis. Yet when it gets to the crunch either the budget won't allow it or nobody wants to take time out from the field. (Perhaps a greater reality is the sales manager's lack of confidence in his own ability to get it to-

gether!).

That is a sad commentary on the quality and perception of some sales managers, for any sales team that is not developing and generally "keeping up with the art" is not only failing to achieve its full potential but also at risk of falling apart as those individuals who feel a strong need for personal progress. a strong need for personal progress training. After all and development decide to go for new trainees! where they can better obtain it. He raised a bar

But let us discuss the good guys questions and negative remarks who have got their act together and and did whatever he could to be

major training outfit.

《 是 篇 篇 3...

An in-house sales trainer has to be an experienced and accombeen unable to find a safe hiderhole in the relative warmsh and therefore see training as in acceptable alternative that is reficiently far away from the "shapend" as to cause them minima

training. After all, that was strictly

He raised a barrage of points:

Some so-called sales training managers are no more than failed salesmen who have been unable to find a safe hidey-hole in the relative warmth and tranquillity of marketing

product training.

One of the first decisions to be made is, who will do it some super-smart high-fligher from inside or outside the company, or do ou mess it up yourself?

There are two important points to remember about sales training: Pirst, knowing all about the product and how to sell it is not sufficient qualification for imparting and implanting knowledge; the skill of being able to teach is

sub-contracted to external organisations. No one knows your product as thoroughly as you do; particularly in terms of its exceptions and idiosyncrasies; its problems and opportunities. Using outsiders to put across such information is an absolute statement duct as thoroughly as you do; particularly in terms of its exceptions and idiosyncrasics; its problems and opportunities. Using outsiders to put across such information is an absolute statement of management failure.

It is effective, if your sales organisation is big enough to justify it, to have your own full-time sales trainer.

But having a company sales trainer doesn't necessarily mean

But having a company sales trainer doesn't necessarily mean that all courses will be generated purely from internal resources. The primary function of such a person is to produce whatever training is necessary, in accordance with the demands of the sales organisation. In many instances this takes the effect of administering and co-ordinating courses which are wholly or in part provided by others,

In some major corporations

some of the better salespeople are obliged to spend a period in the education department as part of their development towards management. That's an excellent idea, it was the practice at IBM when I was there many protects are producted. was there, many parsecs ago, and it didn't seem to do them any

harm!

But few companies have a budget large enough to justify a full-time sales training manager. More to the point, sales training, as opposed to product training, is a much sought-after skill for which many specialist training organisations are prepared to pay highly. If a sales trainer is really good he will

made a firm commitment to intro- disruptive. At first the oth salesmen on the course either disregarded him or thought in antics rather immature and sity But the sales trainer coulds handle the situation. The other students soon perceived this was ness and the sales trainer's credit lity was lost.

In next to no time the whole class switched itself off and generally proceeded to act as stupidly at the original perpetrator. Before the second day was completed the course was cancelled and the course was cancelled.

ner the salesmen concerned sheepishly admitted they didn't really know other than it was pos-

what it all boils down to is professional credibility. As with the salesman before the customer, the sales trainer must be totally convincing in terms of his pre-paredness, ability to perceive and satisfy need, overcome objections and persuade people to his way of

That makes it an extremely manding job that requires a lot of talent, and usually goes with a salary that is significantly less than that of the better salespeople they are training. Hands up, who wants to be a

Alan William sales traineri The crossword appears sest

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